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MINERAL RESOURCES

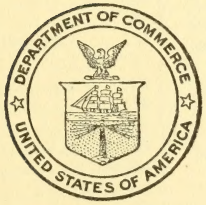
OF THE

UNITED STATES

1925

FRANK J. KATZ
Chief Engineer, Division of Mineral Statistics

PART II—NONMETALS



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FUEL BRIQUETS

By James E. Black[1]

PRODUCTION

During 1925, under the impetus of an increased demand for domestic fuel resulting from the suspension of anthracite mining, the fuel-briquetting industry showed a decided advance in production. The total output, 839,370 net tons, is an increase of 258,900 tons, or 45 per cent, over 1924, a year of depression in the coal industry. This sets a new high record of fuel-briquet production in the United States, the output in 1925 being 20 per cent greater than in 1923, the best previous year. In only five years since 1907, the first year for which production is recorded, has the upward movement been checked, three of the interruptions occurring since 1918.

Fuel briquets produced in the United States, 1924–25

	1924		1925	
	Net tons	Value	Net tons	Value
Eastern States	121,022	$726,976	253,643	$1,842,257
Central States	308,370	2,775,544	422,411	3,684,095
Pacific Coast States	151,078	1,484,102	163,316	1,602,052
	580,470	4,986,622	839,370	7,128,404

The greatest advance in production during 1925 was recorded in the Eastern States. The plants in this section, including those of four newly organized and operating companies, produced 253,643 tons, or more than double the output in 1924. The briquet plants in the Eastern States are largely in what is normally anthracite-consuming territory, but, with the domestic sizes of hard coal cut off by the anthracite suspension that began September 1, an increasing number of householders began to use briquets. Many had become acquainted with the possibilities of this fuel during a similar shortage of anthracite in the winter of 1922–23, and they again used it. In the Central States the increase in production in 1925 as compared with 1924 was 37 per cent, and in the Pacific Coast States it amounted to 8 per cent.

[1] The tables in this report were prepared by Miss J. M. Corse, of the Bureau of Mines, who has compiled the statistics on fuel briquets since 1911.

Fuel briquets produced in the United States, 1907–1925 [1]

Year	Net tons	Value	Year	Net tons	Value
1907	66, 524	$258, 426	1917	406, 856	$2, 233, 888
1908	90, 358	323, 057	1918	477, 235	3, 212, 793
1909	139, 661	452, 697	1919	295, 734	2, 301, 054
1910	(2)	(2)	1920	567, 192	4, 623, 831
1911	218, 443	808, 721	1921	398, 949	3, 632, 301
1912	220, 064	952, 261	1922	619, 425	5, 444, 926
1913	181, 859	1, 007, 327	1923	696, 810	5, 898, 698
1914	250, 635	1, 154, 678	1924	580, 470	4, 986, 622
1915	221, 537	1, 035, 716	1925	839, 370	7, 128, 404
1916	295, 155	1, 445, 662			

[1] Figures for earlier years not available. [2] No canvass for 1910.

Wisconsin, as in recent years, ranked first in production. The output of its two briquet plants was 82 per cent greater than the combined output of the next two important producing States. In addition to Wisconsin, the States having briquet-manufacturing plants, listed in the order of their 1925 production, are Pennsylvania, Washington, Virginia, New Jersey, Oregon, Missouri, Maryland, California, and West Virginia. The greatest change during the year was in New Jersey, where the installation and operation of a new plant increased the State's output nearly tenfold, raising it to fifth rank among the producing States instead of eighth as in 1924. States added to the list of producers for the first time in 1925 are Maryland and West Virginia.

VALUE

The value of the briquets manufactured during 1925 was $7,128,404. This represents an increase of $2,141,782, or 43 per cent, over the 1924 value. The average value per net ton f. o. b. plant, however, decreased from $8.59 to $8.49. This decline in average value was brought about by the lower unit value of the Central States product, which was nearly offset by the greatly increased value per ton in the Eastern States. The value of fuel briquets in the Pacific Coast States was virtually the same in 1925 as in the preceding year when the value was $9.82 per ton. The table following shows the trend of the average value per ton of the briquets made in Pennsylvania and in the Central States for each of the years 1911–1925.

Average value per net ton (f. o. b. plant) of briquets produced in Pennsylvania and in the Central States, 1911–1925

Year	Pennsylvania	Central States	Year	Pennsylvania	Central States
1911	$2. 37	$4. 34	1919	$4. 17	$8. 47
1912	2. 68	4. 47	1920	5. 60	9. 23
1913	2. 65	4. 92	1921	6. 14	9. 28
1914	2. 48	4. 83	1922	5. 93	9. 02
1915	2. 90	4. 26	1923	5. 95	9. 35
1916	3. 83	4. 73	1924	5. 82	9. 00
1917	3. 15	6. 81	1925	6. 35	8. 72
1918	4. 11	8. 17			

The reader should note that in the foregoing discussion of value per ton such "value" is not synonymous with the price paid by the consumer of the product. This value per ton is the total amount of money received by the manufacturer f. o. b. his plant divided by the tonnage of briquets sold. Most briquet plants are so located with

reference to centers of consumption that the price paid by consumers includes an amount sufficient to cover costs of transportation as well as the wholesalers' and retailers' costs and margins of profit.

It will be noted that the average value per ton is much higher for the plants in the Central States than for those in Pennsylvania, a difference that is explained in part by location of the plants with respect to their supply of raw fuel and in part by the prices of competitive fuels.

MONTHLY PRODUCTION

As briquets are used almost exclusively for household heating, the demand for them is seasonal. Production, therefore, is curtailed, and in some plants discontinued, during a part of the summer. The next table shows the fluctuations of tonnage for each month during 1925. April and May marked the low ebb of output, while October, November, and December, because of the scarcity and the high price of domestic-size anthracite, were months of unusual activity.

Monthly production of fuel briquets in the United States in 1925, in net tons

January	93,310	August	63,161
February	62,479	September	79,118
March	47,504	October	118,543
April	26,498	November	123,316
May	26,350	December	128,684
June	28,183		
July	42,224		839,370

RAW MATERIALS AND BINDERS

In 1925 the raw fuel used for the manufacture of briquets amounted to 844,590 net tons. Of this total, 46 per cent was anthracite and semianthracite, 40 per cent was semibituminous and bituminous slack and semicoke, and 14 per cent was subbituminous coal and oil-gas residue. The weight of the binders added being less than that of the moisture and refuse eliminated during the manufacturing process, there was a resultant loss in weight of 5,220 tons. The character of the raw material used as a fuel constituent by the 17 plants reporting production during 1925 is summarized as follows:

Raw fuels briquetted in the United States in 1925

Kind of material used:	Plants
Anthracite culm	7
Semianthracite	1
Semianthracite and carbon	1
Mixture of anthracite fines and bituminous slack	2
Bituminous slack and subbituminous coal	1
Semibituminous slack	1
Semicoke	1
Carbon residue from the manufacture of oil gas	3
	17

Asphaltic pitch still continues to be the outstanding briquet binder and was used by 6 of the 17 plants whose operations are included in this report. One producer employed a mixture of asphaltic pitch and coal-tar pitch, one asphaltic pitch and starch, two a combination of asphaltic pitch and sulphite pitch, and two plants used coal-tar pitch alone. One manufacturer used sulphite liquor,

three used no binder, and one did not specify the character of the binder.

Raw fuels used in making briquets in the United States, 1921–1925, in net tons

Fuel	1921	1922	1923	1924	1925
Anthracite culm and fine sizes and semianthracite	190,964	254,563	331,102	224,539	387,454
Semibituminous and bituminous slack, coke, and semicoke [1]	121,925	235,542	225,508	297,814	341,161
Subbituminous coal and oil-gas residue	85,352	123,339	125,880	[2] 61,012	115,975
	398,241	613,444	682,490	583,365	844,590

[1] Includes no semicoke, 1921 to 1924, and no coke, 1923 to 1925.
[2] Includes no subbituminous coal.

BRIQUETTING PLANTS IN THE UNITED STATES

In all, 17 commercial plants were operated during the year, as listed in the following table. The Scranton Anthracite Briquette Co., Dickson City, Pa., which was idle during 1924 and 1925, has discontinued operations entirely. The experimental plant of the P. E. Welton Engineering Co., at Akron, Ohio, continued to run for demonstration purposes during 1925. During the year five new companies entered the fuel-briquetting field, their plants being situated in California, Maryland, New Jersey, Pennsylvania, and West Virginia.

Briquetting plants operated in the United States in 1925

State	Name and address of operator	Location of plant	Date put in operation	Raw fuel used
Eastern States:				
Maryland	Anthracite Fuel Corporation, Eighth St. and Fait Ave., Baltimore, Md.	Baltimore	1925	Anthracite.
New Jersey	Anthracite Manufacturing Co., 520 Brunswick Ave., Trenton, N. J.	Trenton	1918	Do.
Do	Navicoal Corporation, 437 Chestnut St., Philadelphia, Pa.	Perth Amboy	1925	Do.
Pennsylvania	American Briquet Co., 402 Land Title Building, Philadelphia, Pa.	Lykens	1920	Do.
Do	Anthracite Briquette Co., Sunbury, Pa.	Sunbury	1919	Do.
Do	Lehigh Coal & Navigation Co., 437 Chestnut St., Philadelphia, Pa.	Lansford	1909	Do.
Do	St. Clair Coal Co., 634 Wyoming Ave., Scranton, Pa.	St. Clair	1925	Do.
Virginia	Delparen Anthracite Briquette Co., Parrott, Va.	Parrott	1915	Virginia semianthracite and carbon (petroleum residue).
Do	Virginia Fuel Corporation, P. O. Box 505, Norfolk, Va.	Portsmouth	1923	Anthracite and bituminous slack.
West Virginia	Consolidation Coal Products Co., 67 Wall St., New York, N. Y.	Fairmont	1925	Semicoke.[1]
Central States:				
Missouri	Standard Briquet Fuel Co., 319 N. Fourth St., St. Louis, Mo.	Kansas City	1909	Arkansas semianthracite.
Wisconsin	Berwind Fuel Co., 122 S. Michigan Ave., Chicago, Ill.	Superior	1912	Semibituminous slack.
Do	Stott Briquet Co., Merchants National Bank Building, St. Paul, Minn.	do	1909	Anthracite fines and bituminous slack.
Pacific Coast States:				
California	San Diego Gas & Electric Corporation, 863 Sixth St., San Diego, Calif.	San Diego	1925	Carbon (hydrated).
Do	Los Angeles Gas & Electric Corporation, 810 S. Flower St., Los Angeles, Calif.	Los Angeles	1905	Carbon (petroleum residue).
Oregon	Portland Gas & Coke Co., Gasco Building, Portland, Oreg.	Portland	1913	Do.
Washington	Pacific Coast Coal Co., 612 L. C. Smith Building, Seattle, Wash.	Renton	1914	Bituminous slack and subbituminous coal.

[1] The residue of low-temperature carbonization of bituminous coal.

WORLD'S PRODUCTION

The following table, prepared by L. M. Jones, of the Bureau of Mines, presents all the information at present available on the world's production of fuel briquets in the five-year period 1921–1925. The figures are taken largely from official sources of the several countries supplemented by data from trade publications. They are subject to revision upon the receipt of later returns. In reading the table one should observe that the unit of measure is the metric ton of approximately 2,204.6 pounds, which is closely equivalent to the gross ton of 2,240 pounds.

World's production of fuel briquets, 1921–1925, in metric tons

Country	1921	1922	1923	1924	1925
Algeria	32,799	27,052	31,234	78,924	(1)
Belgium	2,676,680	2,497,350	1,929,260	2,030,310	2,250,840
Canada	(1)	(1)	36,626		
Czechoslovakia:					
Coal	82,890	64,792	99,631	75,710	156,345
Lignite	250,942	172,660	196,205	175,613	212,339
France	4,203,515	4,884,854	5,051,089	3,221,201	3,653,703
Germany:[2]					
Coal	5,735,800	5,757,700	1,941,535	3,812,916	5,003,430
Lignite	28,031,200	29,421,700	26,854,083	29,665,075	33,632,752
Saar[3]	28,000	(1)	(1)	(1)	(1)
Hungary	(1)	(1)	45,251	27,535	(1)
Indo-China	(1)	30,933	46,413	75,211	(1)
Netherlands	585,266	626,432	473,579	541,815	(1)
Poland	(4)	(4)	309,467	444,231	(1)
Spain	732,992	675,884	663,667	627,014	(1)
United Kingdom	1,081,284	1,353,614	1,167,532	1,208,610	(1)
United States	361,919	561,930	632,132	526,591	761,460
Venezuela	2,401	6,900	3,611	(1)	(1)

[1] Data not available.
[2] Exclusive of the Saar district under the control of France.
[3] District under the control of France.
[4] The production of briquets in Polish Upper Silesia in 1921 was 175,068 tons and in 1922 it was 198,057 tons. To include these figures in the above statement would involve duplication, as the output for 1921 and for January to May, 1922, is already included in the German production.

FLUORSPAR AND CRYOLITE

By Hubert W. Davis

FLUORSPAR

Fluorspar, or fluorite, is a nonmetallic crystalline mineral that usually occurs in glassy transparent cubes or cleavable masses. Less commonly it is granular or fibrous in structure, and occasionally is banded. Fluorspar has a specific gravity of 3.2, is brittle, has a hardness of 4, and can easily be scratched with a knife. Chemically it consists of calcium and fluorine in the proportion of 51.1 to 48.9. In color fluorspar ranges, according to purity, from a clear colorless, or slightly bluish, glasslike substance through various brilliant hues, of which purple and green are most common; much of it is white and opaque.

FLUORSPAR SHIPPED

Notwithstanding the record production of steel in 1925, the shipments of fluorspar to steel plants were 12 per cent less than in 1924. There was also a decrease of 12 per cent in shipments of fluorspar to foundries. Of the higher grades of fluorspar, the shipments to manufacturers of glass and hydrofluoric acid were, respectively, 11 and 41 per cent more than in 1924, but the shipments for use in enamel and sanitary ware were 7 per cent smaller.

The total shipments of fluorspar from domestic mines in 1925 amounted to 113,669 short tons, valued at $2,052,342, a decrease of 9 per cent in quantity and 16 per cent in total value as compared with 1924. The general average value per ton f. o. b. mines or shipping points for all grades in 1925 was $18.06, a decrease of $1.55 from the average in 1924. New Mexico was the only State to show an increase of shipments in 1925.

Such details of the shipments of fluorspar from 1922 to 1925, by States, as may be published without revealing, except by permission, the statistics of individual producers are given in the table following.

Fluorspar shipped from mines in the United States, 1922–1925

State	Gravel			Lump			Ground			Total		
	Short tons	Value		Short tons	Value		Short tons	Value		Short tons	Value	
		Total	Average		Total	Average		Total	Average		Total	Average
1922												
Colorado	2,309	$20,169	$8.73							2,309	$20,169	$8.73
Illinois	76,537	1,243,151	16.24	1,722	$96,033	$18.57	5,596	$368,649	$36.42	83,855	1,493,188	17.81
Kentucky	45,689	774,086	16.95	2,629			4,175			52,484	970,059	18.48
New Mexico	1,008	12,320	12.22	820			352			2,180	30,992	14.22
New Hampshire	690	15,353	22.25							690	15,353	22.25
Utah				78	1,404	18.00				78	1,404	18.00
	126,224	2,065,079	16.36	5,249	97,437	18.56	10,123	368,649	36.42	141,596	2,531,165	17.88
1923												
Colorado	3,957	36,631	9.26	2,087	23,079	11.06				6,044	59,710	9.88
Illinois	52,249	1,013,927	19.41	5,659	232,846	26.37	7,137	398,118	36.86	65,045	1,443,490	22.19
Kentucky	39,394	756,701	19.21	2,432			3,615			45,441	945,402	20.81
New Mexico	3,540	38,161	10.78	738			50			4,328	50,861	11.75
New Hampshire				142	3,160	22.25				142	3,160	22.25
Utah				188	3,196	17.00				188	3,196	17.00
	99,140	1,845,420	18.61	11,246	262,281	23.32	10,802	398,118	36.86	121,188	2,505,819	20.68
1924												
Colorado	11,986	130,791	10.91	315	4,620	14.67				12,301	135,411	11.01
Illinois	54,541	1,042,089	19.11	2,766	108,090	22.68	4,760	356,871	35.89	62,067	1,288,310	20.76
Kentucky	41,809	789,352	18.88	932			5,106			47,847	988,940	20.67
New Mexico	1,620	19,318	11.92	883			77			2,580	35,178	13.63
Utah				184						184	3,292	17.89
	109,956	1,981,550	18.02	5,080	112,710	22.19	9,943	356,871	35.89	124,979	2,451,131	19.61
1925												
Colorado	10,560	137,343	13.01	1,216	16,364	13.46				11,776	153,707	13.05
Illinois	46,195	783,451	16.96	3,366	115,814	21.13	4,867	308,881	32.25	54,428	1,024,516	18.82
Kentucky	39,153	669,672	17.10	1,176			4,497			44,826	833,794	18.60
New Mexico	1,487	20,817	14.00	939			213			2,639	40,325	15.28
	97,395	1,611,283	16.54	6,697	132,178	19.74	9,577	308,881	32.25	113,669	2,052,342	18.06

HISTORY OF PRODUCTION

In the next table are presented for the first time statistics showing the production of fluorspar in the different States since 1880. The record of production prior to 1880 was not obtained and the statistics for Kentucky and Colorado are incomplete for certain years after 1880, so that more fluorspar has been mined than is shown in the table. The unrecorded output must be small, however, as it is only since about 1899 that the advantages of fluorspar over limestone as a flux in basic open-hearth steel plants have been generally recognized. Before that time the chief uses were in the preparation of hydrofluoric acid and in the manufacture of opalescent glass, and the demand was limited.

Arizona.—All the fluorspar produced in Arizona up to and including 1917 was from the Castle Dome district, Yuma County, and was obtained as a by-product in lead and zinc mining. During 1918, however, some deposits were opened in which fluorspar was the major product. One of these deposits includes a group of claims in Greenlee County, northeast of Duncan, from which a small quantity of fluorspar was produced during 1918 and 1920. The Neptune fluorspar deposit, 25 miles southwest of Tucson, Pima County, made its initial shipment in 1918 and in 1919 made others. A shipment of 25 tons was made from a property near Aguila, Yavapai County, in 1920.

To the total output reported for the United States since 1880, Arizona has contributed only 1,742 tons.

Colorado.—The mining of fluorspar in Colorado dates back to the early seventies, when about 600 tons was produced from a deposit southwest of Evergreen, Jefferson County.[1] About 1873 or 1874 fluorspar is reported to have been shipped from the Poorman claim, near Jamestown, Boulder County.[2]

From the early seventies to 1903, when the first basic open-hearth steel furnace was started[3] at Pueblo, Colo., it is believed that most of the fluorspar produced in Colorado was used in smelting gold and silver ores. The demand was therefore small and the output probably did not amount to more than 3,500 tons, all of which, with the exception of 600 tons from Jefferson County, was produced in Boulder County. Between 1903 and 1912, in addition to Boulder County, small quantities of fluorspar were produced from time to time in Custer, El Paso, Park, and Jefferson Counties. These outputs, however, were not sufficient to supply the demand at the steel plant at Pueblo and considerable quantities of fluorspar were shipped from the Illinois-Kentucky district to Colorado.

In 1911 fluorspar was recognized at a deposit near Wagon Wheel Gap, Mineral County, and by 1913 development had progressed to the extent that shipments were made to the steel plant at Pueblo, Colo. Small shipments were also made in 1914 but none was sold in 1915. In 1916 greater demand and higher prices resulted in reopening the mine and besides the fluorspar shipped to the Colorado Fuel & Iron Co. and to consumers on the Pacific coast, shipments

[1] Burchard, E. F., Min. and Sci. Press, Aug. 21, 1909.
[2] Aurand, H. A., Fluorspar Deposits of Colorado: Colorado Geol. Survey Bull. 18, 1920.
[3] Iron and Steel Works Directory of the United States and Canada: Am. Iron and Steel Inst., 1920, p. 109.

were made to eastern markets. This mine has furnished more than one-half of all the fluorspar produced in Colorado.

Next to Mineral and Boulder Counties the largest production has come from a mine near Cowdrey, Jackson County. The first shipments, amounting to a few carloads, were made in 1922.

All of the fluorspar produced in Ouray County has been obtained near Ouray. The initial shipment was in 1917. Additional shipments were made in 1918, 1924, and 1925.

A deposit near Duffields, El Paso County, yielded a small quantity of fluorspar during 1911 and 1912. In 1917 a vein of fluorspar was opened near Cather Springs, El Paso County, from which 600 tons was produced that year and 900 tons in 1918, after which it was abandoned.

About 800 tons of fluorspar was shipped from deposits near Rosita, Custer County, during 1906 and 1907. In the northwestern part of Custer County, near the Fremont County line, a deposit of fluorspar near Cotapaxi was opened in 1923, from which shipments amounting to several hundred tons were made to the steel plant at Pueblo, Colo., during 1923, 1924, and 1925.

A complete record of shipments of fluorspar from Colorado prior to 1905 has not been obtained. It is believed, however, that the total fluorspar mined up to 1904 did not exceed 4,400 tons. The shipments reported for 1905 to 1925 amounted to 137,452 tons, or about 5 per cent of the total recorded for the United States since 1880.

Connecticut.—The first fluorspar produced for commercial use in the United States, so far as it is possible to determine, seems to have been mined about 1837 from a vein near Trumbull, Conn.[4] This fluorspar, which was sold for $60 a ton, was said to have been used with magnetic iron pyrite in the smelting of copper ores. No record is available as to the quantity produced.

Illinois.—The predominance of Illinois as a producer of fluorspar is well shown, this State having supplied about 65 per cent of the total recorded from 1880 to 1925. A small part of the total produced in Illinois was obtained from Pope County, but by far the greater part has come from Hardin County, mostly from the properties of the Rosiclare Lead & Fluorspar Mining Co. and the Franklin Fluorspar Co. (formerly the Fairview Fluorspar & Lead Co.). No figures are available as to the quantity of fluorspar produced prior to 1880, but it probably did not exceed 20,000 tons.

In Illinois the first discovery of fluorspar in place seems to have been in 1839, on the property now owned by the Franklin Fluorspar Co. In 1841 fluorspar was again found, but no attempt seems to have ever been made to exploit either of these finds. In 1842 fluorspar and galena was discovered near the present Rosiclare mine and development was undertaken, from which time mining appears to have been carried on more or less continuously, but not until the early seventies, apparently, did shipments begin.[5]

Kentucky.—The first attempt to work the deposits of fluorspar in western Kentucky was in 1835, in Crittenden County. Between that time and the Civil War other primitive attempts were made to mine

[4] Shepard, C. V., Report on the Geological Survey of Connecticut, p. 80, 1837.
[5] Bain, H. F., Fluorspar Deposits of Southern Illinois: U. S. Geol. Survey Bull. 255, 1905.

fluorspar, notably in Livingston County, near Smithland. In the early seventies prospecting and mining was somewhat generally resumed, chiefly in Crittenden County. The first shipments of fluorspar from Kentucky came from the Yandell mine in 1873, the ore being hauled to Dycusburg, on the Cumberland River, and shipped by boat. In the following year the Memphis mines were opened; the fluorspar was hauled to the Ohio River. These two mines remained in operation for several years, but the long wagon hauls over bad roads finally caused them to succumb to the competition of the more fortunately situated Rosiclare mines.[6]

Commercial deposits of fluorspar occur in central Kentucky, chiefly in Mercer and Woodford Counties. The producing area is small and is confined to the bluffs of the Kentucky River for a distance of about 3 miles north-northwest from Mundys Landing.

Prior to 1896 the production of fluorspar in Kentucky does not seem to have been reported except for 1886 and 1887, when 3,000 tons is recorded. The demand for fluorspar prior to 1896 was light, however, so, with the deposits at Rosiclare shipping, the contribution of Kentucky must have of necessity been small. In 1898 increased demand for fluorspar resulted in the opening of mines in Crittenden, Livingston, and Caldwell Counties and a production of 7,675 tons was reported; this increased to 12,000 tons in 1899. From 1898 to 1904 Kentucky furnished annually more fluorspar than Illinois, but since 1905, with the exception of 1921, the shipments from Illinois have exceeded those from Kentucky.

The recorded production of fluorspar from the deposits of Kentucky has been 737,008 tons, or about 28 per cent of the total for the United States since 1880. By far the greater part of this quantity has come from Crittenden County. Livingston County has furnished the next largest amount, and there has been a small contribution from Caldwell County, in western Kentucky, and from Mercer and Woodford Counties, in central Kentucky. In 1918 to 1922 the deposits in Mercer and Woodford Counties are credited with shipments amounting to more than 9,000 tons. There is no record of any fluorspar having been shipped from Mercer and Woodford Counties prior to 1918 and none has been reported since 1922.

Maine.—The occurrence of green fluorspar at Long Island, in Bluehill Bay, is reported by Jackson,[7] who stated that it was sold in apothecaries' shops for 50 cents a pound, but that the demand was limited.

Nevada.—The output of fluorspar in Nevada has been obtained from deposits near Beatty, Nye County. Development work was begun in 1918 and had progressed to the extent that shipments amounting to 932 tons were made during 1919 and 1920; since then the mine has been inactive.

New Hampshire.—All the fluorspar produced in New Hampshire has come from deposits near Westmoreland, Cheshire County. The first shipments were in 1911, and from that year through 1923 a small and irregular output has been reported annually, the largest being in 1917, and amounting to 1,274 tons. The mines were inactive

[6] Ulrich, E. O., and Smith, W. S. T., "The lead, zinc, and fluorspar deposits of western Kentucky": U. S. Geol. Survey Prof. Paper 36, 1905.
[7] Jackson, C. T., Geology of Maine, p. 125, 1838.

in 1924 and 1925. The total contribution of New Hampshire is 7,465 tons.

New Mexico.—To Luna County must be given credit for producing the first fluorspar in commercial quantity in New Mexico, and it was the only source of production in the State up to 1917. Most of the fluorspar from this county has come from deposits near Deming.

The second largest producing county in New Mexico is Dona Ana, virtually all of the production from which has come from the Tortugas mine, near Mesilla Park, opened early in 1920, and from the Heathden mine, near Heathden, opened in 1919.

The Great Eagle mine, near Red Rock, has furnished the greater part of the fluorspar produced in Grant County. Development work was started at this mine in 1917 and in 1918 the initial shipment was made. Other production in this county has come from near Cliff and near Separ.

The fluorspar from Sierra County has been obtained mainly from the Nakaye mine, north of Derry. The first shipment from this county was made in 1919. A small production was reported during 1923 and 1925 from a deposit near Hot Springs.

In 1925 there was a small production from the newly opened Lava Gap fluorspar mines in Socorro County, near Oscuro, but none was shipped.

New York.—Kunz,[8] writing in Mineral Resources for 1888, states:

> About four years ago a small vein of fluorite was discovered in the Archaean limestones in the town of Macomb, Saint Lawrence County, New York. It was worked irregularly from time to time until last summer, when the vein suddenly widened, breaking through into an opening or cavity 22 feet in length and varying in width from 8 to 18 feet. The top, bottom, and sides were lined with a magnificent sheet of crystals, varying from 1 to 6 inches in diameter, and each in turn forming part of larger composite crystals. Between the floor and the walls was a layer of partly-decomposed calcite, which was readily removed, so that groups of crystals weighing from 10 to several hundred pounds each, and one of them measuring 2 by 3 feet, were easily detached. The cavity contained at least 15 tons of fluorite. * * * The fluorite is of a uniform light sea-green color, except where it is attached to the gangue, or at the junction of the crystals.

The production from this operation seems not to have been recorded.

Tennessee.—Deposits of fluorspar are known to exist in Tennessee, but the State has never been a large producer of this mineral. From 1902 to 1906 a small output was made each year, the total amounting to 1,020 tons.

Texas.—The first reported production of fluorspar in Texas was in 1924 from a prospect about 7 miles from Hot Wells, Hudspeth County. The output, amounting to about 48 tons, is not included in the table as it has not been shipped.

Utah.—The only deposit of fluorspar in Utah from which fluorspar has been shipped in commercial quantity is in Tooele County, 20 miles southwest of Clive. The initial shipment was made in 1918 and through 1924 the deposit has yielded 904 tons, most of which has been used for flux at the steel plant at Salt Lake City. The mine was inactive in 1925.

Washington.—A vein of fluorspar near Keller, in the southern part of Ferry County, yielded 60 tons of fluorspar during 1918.

[8] Kunz, G. F., "Precious stones": Mineral Resources of the United States, 1888, p. 583.

Fluorspar produced[1] in the United States, 1880–1925, by States

Year	Arizona		Colorado		Illinois		Kentucky		Nevada		New Hampshire		New Mexico		Tennessee		Utah		Washington		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1880					4,000	$16,000															4,000	$16,000
1881					4,000	16,000															4,000	16,000
1882					4,000	20,000															4,000	20,000
1883					4,000	20,000															4,000	20,000
1884					4,000	20,000															4,000	20,000
1885					5,000	22,500															5,000	22,500
1886					3,500	15,400	1,500	$6,600													5,000	22,000
1887					3,500	14,000	1,500	6,000													5,000	20,000
1888					6,000	30,000															6,000	30,000
1889					9,500	45,835															9,500	45,835
1890					8,250	55,328															8,250	55,328
1891					10,044	78,330															10,044	78,330
1892					12,250	89,000															12,250	89,000
1893					12,400	84,000															12,400	84,000
1894					7,500	47,500															7,500	47,500
1895					4,000	24,000															4,000	24,000
1896					5,000	40,000	1,500	12,000													6,500	52,000
1897					3,562	25,159	1,500	12,000													5,062	37,159
1898							7,675	63,050													7,675	63,050
1899					3,300	23,000	12,600	73,650													15,900	96,650
1900					3,000	12,600	15,450	81,900													18,450	94,500
1901					6,086	37,405	13,500	76,398													19,586	113,803
1902	500				18,360	121,550	29,030	143,410							128						48,018	271,832
1903	79	$6,593			11,413	57,620	30,835	153,960							196	$3,400					42,523	213,617
1904	75				17,205	122,172	19,096	111,499							76						36,452	234,755
1905			1,156	$8,200	33,275	220,206	22,694	132,362							260	1,720					57,385	362,488
1906			300	1,800	28,268	160,623	11,868	79,802							360	1,800					40,796	244,025
1907			3,300	11,409	25,128	141,971	21,058	133,971													49,486	287,342
1908	34	252	701	4,266	31,727	172,838	6,323	48,642													38,785	225,998
1909	30	435	350	2,100	41,852	232,251	7,800	53,233					710	$3,728							50,742	291,747

[1] Beginning with 1906 figures represent shipments from mines. For estimates of unrecorded production in early years, see pp. 9–12.

Fluorspar produced in the United States, 1880–1925, by States—Continued

Year	Arizona		Colorado		Illinois		Kentucky		Nevada		New Hampshire		New Mexico		Tennessee		Utah		Washington		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1910	------	------	268	$1,608	47,302	$277,764	17,003	$124,574	------	------	------	------	4,854	$26,250	------	------	------	------	------	------	69,427	$430,196
1911	------	------	721	4,226	68,817	481,635	12,403	96,574	------	------	800	$6,400	4,307	22,612	------	------	------	------	------	------	87,048	611,447
1912	------	------	1,639	9,834	103,937	695,467	10,473	61,186	------	------	300	1,500	196	1,176	------	------	------	------	------	------	116,545	769,163
1913	100	$800	4,432	26,592	85,854	550,815	19,622	113,903	------	------	200	1,200	5,372	42,976	------	------	------	------	------	------	115,580	736,286
1914	------	------	1,978	12,992	73,811	426,063	19,077	128,986	------	------	250	2,000	------	------	------	------	------	------	------	------	95,116	570,041
1915	------	------	247	1,482	116,340	624,040	19,219	129,873	------	------	650	5,200	485	3,880	------	------	------	------	------	------	136,941	764,475
1916	199	2,587	8,669	42,457	126,369	746,150	19,698	123,596	------	------	800	7,864	------	------	------	------	------	------	------	------	155,735	922,654
1917	135	1,080	17,104	196,633	156,676	1,373,333	43,639	697,566	------	------	1,274	19,110	------	------	------	------	------	------	------	------	218,828	2,287,722
1918	364	5,537	38,475	416,780	132,798	2,887,099	87,604	2,069,185	------	------	1,059	21,243	3,437	64,348	------	------	20	$465	60	$824	263,817	5,465,481
1919	45	450	9,687	150,739	92,729	2,430,361	32,386	883,171	400	$5,600	531	12,826	2,346	37,643	------	------	166	4,784	------	------	138,290	3,525,574
1920	181	3,264	12,852	251,308	120,299	3,096,767	46,091	1,246,942	532	8,672	202	4,040	6,353	101,460	------	------	268	6,094	------	------	186,778	4,718,547
1921	------	------	3,143	39,907	12,477	315,767	15,266	294,513	------	------	567	13,721	3,507	60,186	------	------	------	------	------	------	34,960	724,094
1922	------	------	2,309	20,169	83,855	1,493,188	52,484	970,059	------	------	690	15,353	2,180	30,992	------	------	78	1,404	------	------	141,596	2,531,165
1923	------	------	6,044	59,710	65,045	1,443,490	45,441	945,402	------	------	142	3,160	4,328	50,861	------	------	188	3,196	------	------	121,188	2,505,819
1924	------	------	12,301	135,411	62,067	1,288,310	47,847	988,940	------	------	------	------	2,580	35,178	------	------	184	3,292	------	------	124,979	2,451,131
1925	------	------	11,776	153,707	54,428	1,024,516	44,826	833,794	------	------	------	------	2,639	40,325	------	------	------	------	------	------	113,669	2,052,342
	1,742	20,998	137,452	1,551,321	1,732,924	21,120,053	737,008	10,896,741	932	14,272	7,465	113,617	43,294	521,615	1,020	$6,920	904	19,235	60	824	2,662,801	34,265,596

FLUORSPAR INDUSTRY IN 1925, BY STATES

Colorado.—The production of fluorspar in Colorado amounted to about 10,200 short tons in 1925 and was made by seven producers. The shipments of Colorado fluorspar amounted to 11,776 tons, a decrease of 4 per cent from 1924.

The Colorado Fluorspar Corporation, operating a mine near Cowdrey, Jackson County, discontinued shipping after the expiration of its contracts in July, 1925. Development work at the property, however, was carried on the remainder of the year, and production is expected to be resumed during 1926.

During 1925 the White Mountain Mining Co. completed a 254-foot upraise and did more than 500 feet of drifting at its property near Ouray, Ouray County, but the results were reported to be discouraging. Although fluorspar was exposed most of the time, it was either too badly mixed with quartz or was not wide enough to permit profitable mining. In one place in the raise a small quantity of fluxing fluorspar was mined and at another place a small quantity of high-grade fluorspar was taken from the drift. Further drifting, however, has shown 2 or 3 bunches of fluorspar that may pay for their mining.

Some fluorspar was produced during 1925 from mines near Jamestown, Boulder County, but it was sold without milling, as the Lehman mill, at Jamestown, was inactive during the entire year. The output was small, however, and was used for fluxing purposes.

The Wagon Wheel Gap mine, in Mineral County, worked by the Colorado Fuel & Iron Co., was the largest producer in Colorado in 1925. The company shipped most of the product to its steel plant at Pueblo, Colo. Some lump fluorspar for use in cupola furnaces was shipped during the year.

A small quantity of fluxing fluorspar was shipped to the steel plant at Pueblo from the Blue Spar mine in Custer County.

Illinois.—The production of crude fluorspar in Illinois in 1925 amounted to about 97,000 short tons, equivalent to about 46,000 tons of merchantable fluorspar. This output was made by eight producers. The shipments of fluorspar from Illinois amounted to 54,428 short tons, a decrease of 12 per cent from 1924.

The Rosiclare Lead & Fluorspar Mining Co., operating the Daisy and Empire mines, was the largest producer in Illinois in 1925, its shipments exceeding those for 1924. The Rosiclare mine was inactive during the entire year.

The mines of the Hillside Fluor Spar Mines were worked on a much smaller scale than in 1924. The lease on the Indiana mine, which has been operated by this company since June, 1923, was surrendered to its owner on October 13, 1925.

No actual mining was done by the Franklin Fluorspar Co. at its Illinois mines during 1925, although some crude ore was recovered in the course of development work and in cleaning up the mines. Its mill, however, was running part of the year.

All the fluorspar produced at the Dimick mine, near Rosiclare, was sold to local mills.

Development work, including the sinking of shafts, was done at the property of the Du Bois Fluorspar Co., near Eichorn, but no fluorspar was produced.

Some fluorspar, mined several years ago at the Lee mine, near Karbers Ridge, was prepared for the market during 1925, but it was not sold.

At the Douglas mines, near Karbers Ridge, three shafts were in operation during 1925 but no shipments were made. A mill was completed during the year.

In the Cave in Rock district, the Illinois Fluorspar & Lead Co. and the Basic Mineral Co. were the only producers that shipped any fluorspar during 1925. The Benzon Fluorspar Co. mined some fluorspar at the Spar Mountain mine, but made no shipments.

Kentucky.—The exact quantity of crude fluorspar mined in Kentucky is not known, because at most of the smaller mines only the cleaned material is weighed. Furthermore, a large part of the output from these smaller mines is sold to operators of mills, at which the fluorspar is further treated before being shipped, in consequence it is impracticable to ascertain the actual yield from many individual mines. On the other hand, the actual yield of merchantable fluorspar at some of the larger mines is not available, for the reason that a part of the crude fluorspar mined is not milled during the same year. From such figures as have been reported it is calculated that the output of fluorspar in Kentucky in 1925 is equivalent to about 49,600 tons of merchantable material. This output was made by 16 producers. The quantity of fluorspar shipped from Kentucky in 1925 amounted to 44,826 short tons, a decrease of 6 per cent from 1924.

At the mines near Mexico, Ky., of the Lafayette Fluorspar Co., a subsidiary of the United States Steel Corporation, development work was extended during 1925. At one property the sinking of a 250-foot shaft was completed and at another raising amounting to 170 feet was finished. Mining operation included development of virgin ore bodies and the recovery of fluorspar from old workings of former operators. A modern mill, consisting of log washers, a crusher, rolls, sizing screens, jigs, and tables was completed and put into operation. Fluorspar from the mill is delivered directly into railroad cars on a spur track that was extended to the properties in 1924. Other improvements and additions include surface plants, office and other buildings, two dams for storage of surface water for tailings pond and mill supply, and a narrow-gauge railroad, 1 mile long, which was extended from the end of the standard-gauge railroad to serve other properties along the Tabb vein.

The Gugenheim Mining Co. produced a small quantity of fluorspar during 1925 at the Lucile mine, at Marion.

The Butler mine, near Marion, which was leased in October, 1924, for a period of 10 years by Butler & Haynes, contributed a small output during 1925.

Henry & Frazer did some development work during 1925 at a property about 6½ miles from Marion on the Eaton vein, where the fluorspar is reported to be within 20 feet of the surface. The fluorspar mined in 1925 was said to be low-grade and to require careful preparation to make it satisfactory as flux. Further prospecting, however, is said to have given promise of higher grade fluorspar. Henry & Frazer have leased for a period of two years, beginning November 2, 1925, the Summers mine, about 7½ miles from Marion.

The Kentucky Fluorspar Co. ran its mill at Marion during 1925, but purchased all the fluorspar that was prepared for shipment. Its supply was obtained chiefly from the Watson, Pogue, Memphis, Holly, Hodge, Cross, and Eva Tanguay mines. The larger part of the product from this mill was ground fluorspar.

The output of the Franklin Fluorspar Co. in Kentucky was obtained from the Haffaw mine, near Mexico, the Susie Beeler mine, near Crayne, and the Mary Belle, Ada Florence, and Memphis mines, near Marion. The company operated its mill at Marion during the year, and in addition to handling its own output milled considerable purchased fluorspar and did some custom milling. A property near Salem was reported sold to this company during 1925.

The Eagle Fluor Spar Co. worked the Watson mine, about 7 miles from Marion, during 1925, producing more fluorspar than in 1924. The larger part of the 1925 output was of "acid" grade.

The Blue and Marble mine, near Mexico, was operated on a slightly larger scale during 1925 by the Keystone Fluorspar & Lead Co.

The Davenport mine, near Salem, first worked in 1924, increased its output somewhat during 1925. It is operated by the Independent Fluorspar Co.

The Holly mine, near Sheridan, operated by the Holly Fluorspar Co., sold considerably more fluorspar than in 1924.

The United Mining Co. worked the Bonanza mine, near Lola, Livingston County, and completed a 50-ton mill in 1925. Early in the year the company surrendered its lease on the Nancy Hanks mine, near Salem, Livingston County.

Development work was continued during 1925 by the Princeton Spar Co. at its property near Crider, Caldwell County, and some fluorspar was produced and shipped. According to the manager, R. C. Schwenck, the deposit at this property is the largest ever discovered in Caldwell County, the average width of the vein being reported as 7 feet.

New Mexico.—The output of fluorspar in New Mexico in 1925 amounted to about 2,500 short tons of merchantable grade. This output was made by four producers. The shipments in 1925 were 2,639 tons, an increase of 2 per cent over 1924.

The New Mexico Fluorspar Corporation produced a small quantity of fluorspar at its property near Derry, Sierra County, but made no shipments during 1925.

The Tortugas mine, near Mesilla Park, Dona Ana County, operated by Hayner & Manasse, was the chief producer and shipper of fluorspar in New Mexico during 1925. At this mine the main shaft was reported sunk to a depth of 286 feet. The vein at that depth is said to be 3 to 7 feet wide and to carry about 18 inches of high-grade fluorspar. Several hundred tons of fluorspar were produced by lessees from claims near the Tortugas mine and were shipped by Hayner & Manasse.

A small quantity of fluorspar was produced and shipped from the Louise mine, near Separ, Grant County.

At the newly opened Lava Gap mine in Socorro County, near Oscuro, a few hundred tons of fluorspar was mined from superficial workings, in which considerable ore is reported by the manager,

C. B. Hanson, to have been exposed. Experiments in treating the ore from this mine were made in a small jig plant and at a 2-ton decrepitator, but the jigs were said to be unsuccessful. A decrepitator and equipment for the electrostatic separation of 10 tons of finished fluorspar daily were reported in course of construction in March, 1926.

Utah.—The Silver Queen mine, near Clive, Tooele County, which has been worked by the Fluorite Mines Co. since 1918, was idle during 1925. As the lease had expired the mine was surrendered to the owner.

STOCKS OF FLUORSPAR

According to the reports of producers the total quantity of fluorspar in stock at the mines or at shipping points at the end of 1925 amounted to 66,886 tons, a decrease of 4 per cent from 1924. These stocks consisted of 22,551 tons of ready-to-ship fluorspar and 44,335 tons of crude fluorspar, which must be milled, calculated to be equivalent to about 26,000 tons of ready-to-ship fluorspar. As the quantity of fluorspar in stock piles must be partly estimated, there are variations in the mine reports from year to year that prevent an absolute balance between the quantity mined and the quantity shipped and in stock.

Stocks of fluorspar at mines or shipping points in the United States, 1924–25, by States, in short tons

State	1924			1925		
	Crude [1]	Ready-to-ship	Total	Crude [1]	Ready-to-ship	Total
Arizona	175	225	400	175	225	400
Colorado	4,024	350	4,374	1,048	250	1,298
Illinois	7,129	23,533	30,662	12,266	12,530	24,796
Kentucky	17,326	15,775	33,101	30,318	9,216	39,534
Nevada	250	280	530	250	280	530
New Mexico	210	255	465	230	50	280
Texas	48		48	48		48
	29,162	40,418	69,580	44,335	22,551	66,886

[1] The greater part of this crude (run-of-mine) fluorspar must be beneficiated before it can be marketed.

IMPORTS AND EXPORTS [9]

The total imports of fluorspar into the United States in 1925 amounted to 48,700 short tons and were the second largest ever recorded. The imports in 1925 showed a decrease of 5 per cent in quantity and 16 per cent in total value from those of the record year 1924. The value assigned to the foreign fluorspar averaged $9.63 a ton. The cost to the consumers in the United States includes, in addition to the duty of $5 a short ton, loading charges at the docks, the ocean freight charges, and other small charges, besides the freight charges from the docks to manufacturers' plants.

[9] The statistics of imports were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce; those of exports were supplied by the producers. No exports of fluorspar are recorded by the Bureau of Foreign and Domestic Commerce.

The imports were equivalent to 43 per cent of the domestic shipments of fluorspar, as compared with 41 per cent in 1924.

The United Kingdom continues to be the chief source of imported fluorspar, supplying 44 per cent of the total in 1925. Most of the fluorspar from this source is of fluxing grade.

The imports of fluorspar from Germany showed an increase of 71 per cent in quantity in 1925. Some high-grade fluorspar is being imported from Germany.

The imports of fluorspar from British South Africa were considerably less than in 1924. All of the fluorspar from this source is of "acid" grade and is used in the manufacture of hydrofluoric acid. The deposits from which the fluorspar is obtained are near Ottoshoop, Zeerust, South Africa, and are reported to be roughly circular in shape, ranging from 70 to 150 feet across; the deepest workings are down about 60 feet.

A noteworthy increase in the imports of fluorspar from France is recorded in 1925. This increase reflects the operations of the newly opened mines in the Department of Var, some notes concerning which are given on pages 22 to 23.

The imports of fluorspar from Italy increased from 1,585 short tons in 1924 to 4,278 tons in 1925. Most of this fluorspar was of fluxing grade.

The fluorspar imported from Belgium was high-grade ground material, some of which was used in the manufacture of glass and some in the manufacture of enamel and sanitary ware.

Most of the fluorspar from China was sold to steel manufacturers in California.

By the tariff act of 1922 the import duty on fluorspar was increased from $1.50 a long ton ($1.34 a short ton) to $5.60 a long ton ($5 a short ton).

The distances that domestic fluorspar must be transported by rail from mines to steel plants in the Lehigh and Susquehanna Valleys of Pennsylvania are generally much greater than the distances that foreign fluorspar must be moved from the ports of entry to these plants; moreover, a large part of the imported material is carried as ballast, making possible a lower market price than would have to be charged if it were carried as a primary cargo. Except when ocean freight rates are moderate, however, foreign fluorspar is not in a position to enjoy much advantage in American markets, for the reason that it is not generally of so high a grade as the mechanically cleaned domestic product. As fluorspar is of value chiefly according to its purity, purchasers should compare the American fluorspar with foreign fluorspar not on the basis of price per ton but on metallurgical efficiency.

Fluorspar imported into the United States, 1924–25, by countries

[General imports]

Country	1924			1925		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Africa:						
British South	10,585	$134,959	$12.75	7,906	$108,647	$13.74
Portuguese	540	13,018	24.11			
Belgium	6	75	12.50	78	1,624	20.82
Canada	213	3,216	15.10			
China	506	5,089	10.06	559	5,816	10.40
Czechoslovakia				27	591	21.89
France	232	2,782	11.99	2,537	20,887	8.23
Germany	6,834	69,357	10.15	11,680	103,845	8.89
Italy	1,585	14,804	9.34	4,278	32,208	7.53
Netherlands	1,177	13,951	11.85			
United Kingdom:						
England	29,089	296,662	10.20	21,635	195,229	9.02
Scotland	276	1,729	6.26			
	51,043	555,642	10.89	48,700	468,847	9.63

Producers of fluorspar reported exports in 1925 amounting to 1,055 short tons, valued at $17,574, or $16.66 a ton, as compared with 617 tons, valued at $14,489, or $23.48 a ton, in 1924. With the exception of 30 tons to Mexico, all of the exported fluorspar went to Canada.

CONSUMPTION AND USES

The market for the bulk of fluorspar sold in the United States depends on the condition of the steel industry, and the demand fluctuates with the rise and fall in the production of basic open-hearth steel. From 80 to 85 per cent of the fluorspar produced in the United States is used as a flux in basic open-hearth steel furnaces. Steel makers require that such fluorspar be in pieces not larger than three-quarters inch and that it show on analysis at least 80 per cent (preferably more) calcium fluoride and not more than 6 per cent silica. This flux is used chiefly for giving fluidity to slags, but it also facilitates the passage of impurities such as sulphur and phosphorus into the slag.

Fluorspar is used extensively in the manufacture of ceramic products, such as enameled and sanitary ware, opalescent glass, facing for bricks, and vitriolite, and in the manufacture of hydrofluoric acid. For ceramic products and glass manufacture a ground fluorspar analyzing 92 to 98 per cent calcium fluoride and from 1 to 4 per cent silica is demanded. For the manufacture of hydrofluoric acid fluorspar is sold either in lump form or pulverized and is usually guaranteed to contain not less than 98 per cent calcium fluoride and not over 1 per cent silica.

Fluorspar also finds use as a flux in some blast-furnace operations and in iron and brass furnaces; in the smelting of gold, silver, and copper ores; in the refining of copper, antimony, and lead; in carbon electrodes; and in the manufacture of sodium fluoride used as a wood preservative and insecticide.

Data furnished by steel manufacturers who produced 35,229,755 long tons of basic open-hearth steel in 1925, or 95 per cent of the total made by all steel manufacturers, show that they consumed 130,804 short tons of fluorspar in 1925 and had stocks on hand amounting to 46,844 short tons on January 1, 1926. If the few steel companies from whom no reports were received consumed a like proportion of fluorspar, the figures given indicate a total consumption in all basic open-hearth steel plants of about 137,700 tons, and total stocks of about 49,400 tons on January 1, 1926. Similar information indicated a consumption of about 119,800 tons for all plants in 1924 and stocks of about 64,000 tons on January 1, 1925.

Estimated consumption and stocks of fluorspar at basic open-hearth steel plants, 1921–1925

	1921	1922	1923	1924	1925
Production of basic open-hearth steel ----long tons--	15,082,564	28,387,171	34,665,021	30,719,523	37,087,342
Consumption of fluorspar in basic open-hearth steel production (estimate) ----short tons--	61,800	105,000	140,000	119,800	137,700
Consumption of fluorspar per ton of steel made----pounds--	8.2	7.4	8.1	7.8	7.4
Stocks of fluorspar on hand at steel plants at end of year (estimate)----short tons--	30,000	65,000	49,900	64,000	49,400

The consumption of fluorspar per ton of steel made varies widely from year to year. That for 1925 ranged from a low of 2.5 pounds to a high of 26.8 pounds and averaged 7.4 pounds; the range in 1924 was from 3.3 to 24.9 pounds and averaged 7.8 pounds. Figures from reports furnished by certain manufacturers who make about 70 per cent of the total steel produced are given in the following table:

Average consumption of fluorspar per ton of steel, 1921–1925, in pounds

1921	1922	1923	1924	1925
18.644	18.476	16.176	19.295	13.983
4.843	7.113	8.973	7.409	7.893
7.633	6.552	6.416	6.857	6.224
9.578	8.804	7.780	5.365	4.809
7.086	5.308	5.799	5.383	4.568
9.224	7.051	6.475	7.652	9.090
11.578	9.331	9.880	8.747	8.656

SHIPMENTS, BY USES

The great dependence of the fluorspar industry on the steel industry is shown by the fact that by far the greater part of the fluorspar shipped goes to steel manufacturers. There is considerable variation in the average value per ton of the fluorspar shipped to the several industries. The high value of fluorspar for hydrofluoric acid, glass, and enamel and sanitary ware is due to the high quality demanded.

Fluorspar shipped from mines in the United States, 1924–25, by uses

Use	1924				1925			
	Percentage	Short tons	Value		Percentage	Short tons	Value	
			Total	Average			Total	Average
Steel	83.49	104,349	$1,849,073	$17.72	80.73	91,760	$1,482,461	$16.16
Foundry	5.71	7,138	159,533	22.35	5.52	6,275	121,177	19.31
Glass	4.87	6,094	214,288	35.16	5.95	6,767	211,331	31.23
Enamel and sanitary ware	2.78	3,471	120,955	34.85	2.85	3,237	101,060	31.22
Hydrofluoric acid (including fluorspar used in manufacture of aluminum and refining of lead)	2.52	3,150	89,413	28.39	3.92	4,455	114,059	25.60
Miscellaneous	.13	160	3,380	21.13	.10	120	4,680	39.00
	99.50	124,362	2,436,642	19.59	99.07	112,614	2,034,768	18.07
Exported	.50	617	14,489	23.48	.93	1,055	17,574	16.66
	100.00	124,979	2,451,131	19.61	100.00	113,669	2,052,342	18.06

FLUORSPAR IN FOREIGN COUNTRIES

CANADA

The Rock Candy mine and mill at Lynch Creek, British Columbia, resumed operations during the latter part of 1925. Previous to the Fordney tariff the greater part of the output of this mine was exported to the United States, where it was used as a flux in the manufacture of basic open-hearth steel. It is reported that a contract has been made with steel manufacturers in Ontario to take most of the output of the mine.

The production of fluorspar in Canada during 1925 amounted to 3,886 short tons, valued at $19,234, as compared with 76 short tons, valued at $1,343, in 1924. Of the production in 1925, all except 12 tons was from British Columbia.[10]

Imports of fluorspar into Canada increased considerably in 1925, amounting to 5,111 short tons, valued at $60,458, as compared with 4,355 tons, valued at $50,158, in 1924.

FRANCE[11]

The fluorspar deposits in the eastern end of the Department of Var, near the French Riviera seacoast, have been developed and since August, 1925, three mines have been put in operation, which are producing an aggregate of 100 tons a day. The product is exported mainly to the United States.

The Font Sante and Les Adrets mines are in the upper valley of the Reyran, about 10 to 15 miles north of Frejus, and the Garot mine is on the right bank of the Reyran, about 9 miles north of Frejus, in the Montauroux region. The eastern part of the fluorspar area lies in the upper valley of Argentière Creek. The valleys in which

[10] "Preliminary report of the mineral production of Canada during the calendar year 1925": Dom. Bur. Statistics.

[11] Frost, Wesley, American consul, Marseille, France, consular report dated Dec. 1, 1925.

the mines are situated have an altitude of from 650 to 1,300 feet above sea level.

Modern plants have been installed at the mines. The Font Sante mine is producing about 50 tons a day and the Garot mine about 40 tons a day. The output of the Les Adrets mine at present is a few tons a day and is used chiefly in the aluminum works at La Barrasse, near Marseille. The production of these mines has been steadily increasing, however, and it is reported that the combined output during 1926 is expected to be larger.

The output of the mines is taken in automobile trucks to Frejus, and that for export is shipped over the Paris-Lyon-Méditerranée Railway westward to Toulon for embarkation. The distance from the mines to the seacoast at La Napoule is shorter than to Frejus, but the roads are bad. It is reported, however, that a project for a new road has been approved by the local authorities and its construction is to begin soon. When the new highway is completed the fluorspar will be trucked to La Napoule.

It was originally expected that the fluorspar from these mines would be embarked at San Raphael, but that port has been so burdened with bauxite shipments that its facilities could not readily meet the needs of the new traffic. The railway freight charges from Frejus to Toulon are small, however, being only one-third as great as the truckage costs from the mines to the railway. Toulon has excellent port facilities and is frequently visited by tramp steamers which load cargoes of cork and cork waste for the United States. These steamers can afford to take fluorspar as ballast at low rates. Thus Toulon has become, for the time being at least, a more economical port of shipment than San Raphael.

The quality of the fluorspar, as shown by official analysis, is very high, the calcium fluoride content ranging from 92 to 98 per cent and the silica content ranging from 1 to 3.4 per cent, the remainder being ferrous earth. The prices thus far established have varied with the purity of the shipments. Fluorspar guaranteed to contain 98 per cent of calcium fluoride has ranged from $18.50 to $20 a ton, c. i. f. Atlantic seaboard, whereas run-of-mine shipments, grading 85 per cent or more calcium fluoride, are reported to have been quoted at $12.50 a ton. The local price seems to be about 225 francs a ton.

Fluorspar is also found at St. Laurent-les-Bains, in Ardèche, where one mine is producing about 1½ tons a day of high-grade fluorspar, which is said to be exported to England to be used to raise the calcium fluoride content of the fluorspar that is exported to the United States.

In Auvergne a mine with an annual output approximating 1,500 tons of fluorspar is worked to supply the needs of an electro-metallurgical company.

In the Vosges Mountains a small deposit of fluorspar is being worked as a source of supply for steel works.

Undeveloped deposits of fluorspar are said to exist in Morbihan, to the northeast of St. Nazaire, in Brittany. These are said to be controlled by the same organization that is developing the Var deposits.

There are deposits of fluorspar in the Maures Mountains, east of Marseille. The fluorspar here is said to be so mixed with other minerals as to be workable only with difficulty.

PRODUCTION, BY COUNTRIES

The following table was compiled by L. M. Jones, of the Bureau of Mines, from official sources so far as possible.

Production of fluorspar, 1921–1925, by countries, in metric tons

Country	1921	1922	1923	1924	1925
Australia:					
New South Wales				478	(1)
Queensland	545			1,894	(1)
Victoria	199				(1)
Canada	5,025	4,085	126	69	3,525
France	5,776	9,251	12,913	(1)	(1)
Germany:					
Bavaria	7,210	13,221	10,543	21,663	(1)
Prussia	11,989	8,630	10,810	13,078	(1)
Saxony	4,763	5,493	3,215	4,616	(1)
Great Britain	23,508	33,343	49,818	56,286	(1)
Italy	1,600	1,395	3,362	6,831	7,700
Japan	(1)	36	(1)	(1)	(1)
Spain	176	392		4,474	(1)
Union of South Africa	(1)	(1)	10,975	10,192	(1)
United States	31,715	128,453	109,939	113,378	103,118

[1] Figures not available.

CRYOLITE

Cryolite occurs in commercial quantities and is mined only in Greenland, at Ivigtut. Formerly two-thirds of the product was sold to the Pennsylvania Salt Co. and the other third went to Copenhagen, but at present these relative proportions are reversed. Of the cryolite shipped to the United States the greater part is now used as a flux in the metallurgy of aluminum and for making opaque glass. In aluminum metallurgy in this country the mineral is being supplanted by artificial cryolite.

An article on the cryolite mine at Ivigtut has recently been published.[12] It discusses the discovery, exploitation, and mining of cryolite and describes the geology and mineralogy of the deposit.

The imports of cryolite into the United States in 1925, according to the Bureau of Foreign and Domestic Commerce, amounted to 9,844 long tons, valued at $690,651, or $70.16 a ton, compared with 6,320 long tons, valued at $320,670, or $50.74 a ton, in 1924.

[12] Gordon, S. G., "Mining cryolite in Greenland": Eng. and Min. Jour.-Press, vol. 121, Feb. 6, 1926, pp. 236–240.

FULLER'S EARTH

By Jefferson Middleton

GENERAL CONDITIONS

The fuller's earth industry continued to show progress in 1925, the product sold or used by producers in the United States increasing both in quantity and value. This industry has advanced steadily since 1912, except during 1921. The output for 1925, 206,574 short tons, valued at $2,923,965, was reported by 14 operators in 7 States. This quantity was the largest ever reported and was 16 per cent greater than that of 1924 and more than four times that of 1915. The value of the output for 1925 was also the largest ever recorded. It was 11 per cent greater than that of 1924 and nearly six times as great as that of 1915. Since 1920 there has been a steady decline in the average value per ton of fuller's earth, the value of 1925—$14.15—being more than $5 lower than that of 1920, the year of highest average. Imports, which have been decreasing in recent years, increased 10 per cent in quantity and 20 per cent in total value in 1925 compared with 1924.

The apparent consumption of fuller's earth in the United States in 1925 was about 208,000 tons. The domestic earth used constituted 96 per cent of this total.

In addition to the so-called bentonites found in the West which have been used to a considerable extent, after chemical treatment, as a clarifying medium, materials have been discovered in Kern County, Calif., and Nye County, Nev., which differ markedly from the bentonites; they are said to be much more efficient, without treatment, as bleaching agents than the natural argillaceous fuller's earth and to be the equal of the chemically treated clays. The Engineering and Mining Journal-Press of March 9, 1926, contains an article, by Victor M. Arciniega, on refinery clays mined in Nevada; it describes the occurrence, characteristics, method of mining, and use of these clays. The development of the deposits and the use of considerable quantities of this material were a striking feature in the industry in 1925. Another feature was the practical abandonment of the deposits in Manatee County, Fla.—deposits that have produced large quantities of fuller's earth. The reasons for this action were the distance of the deposits from market, unfavorable labor conditions, and possibly the increasing values of land in Florida.

OCCURRENCE

Fuller's earth has been reported as occurring in Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Illinois, Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New York, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Virginia, and Washington, but in 1925 it was produced only in California, Florida, Georgia, Illinois, Massachusetts, Nevada, and Texas.

USES

Fuller's earth is used mainly as a filtering medium in the clarifying or bleaching of fats, greases, and mineral and vegetable oils. Its original use was in the fulling of woolen cloth, and from that it derived its name, but such use, at least in this country, has almost been abandoned. Fuller's earth is also said to be used in the manufacture of pigments for printing wall paper, in detecting certain coloring matters in some food products, as a substitute for talcum powder, and in medicine as a poultice and as an antidote for alkaloid poisons. Another suggested use is in deliming hides in the manufacture of leather. It has been stated that the fuller's earth cake from oil mills can be used in the manufacture of hand soaps, concrete, waterproofing, and asphalt preparations.[1]

HISTORY

Fuller's earth was first discovered in the United States in 1891 near Alexander, Ark., by John Olsen. The mineral was used for a time by the Southern Cotton Oil Co., at Little Rock, Ark., but its use was finally abandoned.[2] The real beginning of the industry in this country, however, was in 1893, near Quincy, Fla., when quite by accident, in an unsuccessful effort to burn brick on the property of the Owl Cigar Co., an employee called attention to the close resemblance between the clay used and the German fuller's earth. This discovery in Florida caused considerable excitement, and deposits of fuller's earth were reported from a number of States, but the material in most of these deposits was found to have no value as fuller's earth. Production began in Florida almost immediately after the discovery, and in 1897 to 1899 fuller's earth was produced in Florida, Colorado, New York, and Utah. Florida maintained its rank as the leading producer continuously until 1924. In 1901 Arkansas again became a producer. From 1904 to 1907 Arkansas was the second largest producer, but no production of fuller's earth has been reported from Arkansas since 1922. Fuller's earth was found in Georgia soon after its discovery in Florida, but Georgia did not become a producer until 1907, when it ranked third as a producing State; it has ranked second since 1909, except in 1918 and 1919, when Texas was second, and in 1924 and 1925 when it ranked first. In 1904 Alabama and Massachusetts, in 1907 South Carolina and Texas, in 1909 California, in 1918 Nevada, and in 1922 Illinois and Pennsylvania first appeared as producers. Pennsylvania has reported none since 1922.

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[1] Chem. and Met. Eng., vol. 26, Mar. 29, 1922, p. 602.

[2] Branner, J. C., "An early discovery of fuller's earth in Arkansas." Trans. Am. Inst. Min. Eng., vol. 43, pp. 520–522, 1913.

PRODUCTION

Fuller's earth sold or used by producers in the United States, 1916–1925

Year	Operators reporting sales	Short tons	Value at mines	
			Total	Average
1916	10	67,822	$706,951	$10.42
1917	11	72,567	772,087	10.64
1918	14	84,468	1,146,354	13.57
1919	10	106,115	1,998,829	18.83
1920	12	128,487	2,566,189	19.51
1921	12	105,609	1,973,848	18.69
1922	15	138,944	2,289,719	16.48
1923	15	149,134	2,217,523	15.07
1924	13	177,994	2,632,342	14.79
1925	14	206,574	2,923,965	14.15

The small number of producers in some States makes it impossible to publish totals for those States without disclosing the individual operations. The South continues to lead in the production of fuller's earth, 85 per cent of the output of 1925 having been produced in the States of Florida, Georgia, and Texas. Georgia led in production and value, with Florida second; Texas was third in output but fourth in value.

IMPORTS AND EXPORTS

Imports of fuller's earth, which once constituted the entire supply, were increasing before the World War and reached their maximum in 1914. Since 1914 the general trend has been downward. In 1925 there was an increase of 713 tons and of $18,807, or 10 and 20 per cent, respectively, compared with 1924. The average value per ton of imported fuller's earth in 1925 was the highest recorded. In 1925 wrought or manufactured earth represented 97 per cent of the total quantity and 98 per cent of the total value of the fuller's earth imported.

Fuller's earth imported for consumption in the United States, 1916–1925 [1]

Year	Unwrought or unmanufactured			Wrought or manufactured			Total		
	Short tons	Value		Short tons	Value		Short tons	Value	
		Total	Average		Total	Average		Total	Average
1916	1,132	$7,742	$6.84	15,669	$131,922	$8.42	16,801	$139,664	$8.31
1917	1,441	11,718	8.13	15,553	164,699	10.59	16,994	176,417	10.38
1918	1,085	12,636	11.65	15,837	213,599	13.49	16,922	226,235	13.37
1919	373	4,301	11.53	13,500	185,410	13.73	13,873	189,711	13.67
1920	1,518	19,793	13.04	17,497	202,100	11.55	19,015	221,893	11.67
1921	483	6,172	12.78	9,261	113,243	12.23	9,744	119,415	12.26
1922	607	7,413	12.21	9,962	128,282	12.88	10,569	135,695	12.84
1923	642	8,252	12.85	7,905	105,692	13.37	8,547	113,944	13.33
1924	296	3,385	11.44	7,006	89,103	12.72	7,302	92,488	12.67
1925	215	2,619	12.18	7,800	108,676	13.93	8,015	111,295	13.89

[1] Compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Exports of fuller's earth are not reported separately by the Bureau of Foreign and Domestic Commerce, but five operators reported that 6,195 tons of fuller's earth were exported in 1925 to Belgium, Canada, Cuba, Denmark, England, France, Germany, India, Mexico, Netherlands, Poland, Russia, South America, Scotland, and Sweden. This is a slight decrease from 1924.

GERMAN FULLER'S EARTH

The following abstract of a paper[3] on fuller's earth in Germany may be of interest to American producers and consumers.

The areas where fuller's earth is found are limited and comparatively small. They are confined to Lower Bavaria, near Mossburg, Landslout, Achdorf, and Landau. Physically and chemically the German and American earths seem to be identical, except for the reaction with hydrochloric acid. The treatment with acid does not essentially change the chemical constitution of the German earth, but its physical condition is extremely altered by such treatment so that its bleaching power, which as the earth comes from the mine is much smaller than that of the American earth, increases and surpasses that of the American earth; hence the so-called German high-active fuller's earth.

The raw earth is washed and screened to free it from impurities. After having been washed, the earth is mixed with a certain quantity of hydrochloric acid in an acid-proof tank and heated to the boiling point for several hours by the introduction of steam. Stirring machines prevent the settling of the earth. After this the mixture is placed in a large storage reservoir, where the greater part of the acid is removed. From the reservoir the earth is pumped into filters, where it is finally freed from the remaining acid and liquid. By washing with water in the filter any residual acid is removed. The earth as it comes from the filter contains about 60 per cent of water; this is reduced in a kiln to about 10 per cent. The earth comes out of the kiln in pieces 1 to 2 inches in diameter. Different systems of grinding are used. The German earth is ground very fine, as its bleaching power is improved by fine grinding. It is essential that all traces of acid be removed from bleaching earth.

The production of German fuller's earth in 1924 was 48,000 short tons, including both high-active and raw earth. Some grades of earth are offered for sale which contain a small amount of discoloring matter (carbon). This is preferred for oils that are very hard to bleach.

There are sufficient quantities of raw earth for many decades, and new deposits are discovered frequently.

[3] Deckert, R., "German fuller's earth—deposits, preparation, and marketing": Eng. and Min. Jour.-Press, vol. 120, Nov. 28, 1925, p. 848

ASPHALT AND RELATED BITUMENS

By G. R. Hopkins and A. B. Coons[1]

PRODUCTION

Sales of native asphalt and related bitumens, including bituminous rock, gilsonite, and wurtzilite (elaterite), at mines in the United States in 1925, amounted to 584,850 short tons, valued at $4,148,400. This was an increase over 1924 of 4 per cent in quantity and of 5 per cent in value.

Sales of asphalt and asphaltic materials manufactured from petroleum at refineries in the United States during 1925 amounted to 3,178,370 short tons, which is an increase over 1924 of nearly 100,000 tons, or 3 per cent. These sales were valued at $42,825,770, an increase over 1924 of 19 per cent. Of the total sales during 1925, 1,206,700 tons, with a value of $15,305,760, was manufactured from domestic crude petroleum, and 1,971,670 tons, with a value of $27,520,010, was produced from foreign crude petroleum.

The proportions of asphalt manufactured from domestic petroleum and from foreign petroleum in 1925 were virtually the same as in 1924. However, the asphalt from foreign petroleum showed a much larger increase in average value per ton.

Asphalt sold by producers at mines or refineries in the United States, 1916–1925

[Value f. o. b. mine or refinery]

Year	Native asphalt and related bitumens		Manufactured asphalt			
			From domestic petroleum		From foreign petroleum	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	98,477	$923,281	688,334	$6,178,851	572,387	$6,018,851
1917	81,604	773,424	701,809	7,734,691	645,613	7,441,813
1918	60,034	780,808	604,723	8,796,541	597,697	9,417,818
1919	88,281	682,989	614,692	8,727,372	674,876	7,711,510
1920	198,497	1,213,908	700,496	11,985,457	1,045,779	14,272,862
1921	296,412	1,985,583	624,220	9,048,221	908,093	11,761,358
1922	327,792	2,253,180	805,145	10,385,925	1,242,163	13,899,407
1923	400,236	2,885,631	995,654	13,060,174	1,378,722	16,840,045
1924	562,367	3,958,339	1,158,456	14,305,007	1,920,915	21,710,793
1925	584,850	4,148,400	1,206,700	15,305,760	1,971,670	27,520,010

NATIVE ASPHALT AND RELATED BITUMENS

Kentucky, in 1925, maintained its rank among the States as the chief producer of native asphalt, with sales of 286,850 short tons of bituminous rock, valued at almost $2,500,000. Texas, with 204,530 tons of bituminous rock, was second in quantity, a position that it held in 1923 and 1924. As in 1923 and 1924, Utah was the only State to produce bitumens other than bituminous rock, and sales of 39,520 tons of gilsonite and 270 tons of wurtzilite, valued at $767,900 and $18,400, respectively, were reported. An increase in output and in the average value of its products enabled Utah to pass Texas and to resume its rank as second to Kentucky in total value.

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Native asphalt and related bitumens sold at mines in the United States, 1921–1925, by varieties and by States

[Value f. o. b. mine]

	1921		1922		1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Bituminous rock:										
Alabama					1,200	$4,200	8,498	$29,743	23,550	$77,080
Texas	260,468	$1,707,188	152,567	$558,274	151,356	555,533	220,598	779,696	204,530	692,730
California			97,924	907,664	2,945	11,780	3,731	14,088	2,680	16,100
Kentucky					184,300	1,468,396	274,743	2,386,557	286,850	2,493,360
Missouri							300	3,150		
Oklahoma	23,569	81,527	47,556	163,502	25,800	150,100	17,961	80,825	27,450	82,830
Total	284,037	1,788,715	298,047	1,629,440	365,601	2,190,009	525,831	3,294,059	545,060	3,362,100
Gilsonite: Utah	10,066	178,224	29,693	622,107	34,425	681,622	35,907	603,620	39,520	767,900
Grahamite:										
Oklahoma	2,004	6,060	41	533						
Utah							60	450		
Total	2,004	6,060	41	533			60	450		
Ozokerite: Utah					10	2,000	300	36,000		
Wurtzilite: Utah	305	12,584	11	1,100	200	12,000	269	24,210	270	18,400
Grand total	296,412	1,985,583	327,792	2,253,180	400,236	2,885,631	562,367	3,958,339	584,850	4,148,400
RÉSUMÉ BY STATES										
Alabama					1,200	4,200	8,498	29,743	23,550	77,080
Texas	260,468	1,707,188	152,567	558,274	151,356	555,533	220,598	779,696	204,530	692,730
California			97,924	907,664	2,945	11,780	3,731	14,088	2,680	16,100
Kentucky					184,300	1,468,396	274,743	2,386,557	286,850	2,493,360
Missouri							300	3,150		
Oklahoma	25,573	87,587	47,597	164,035	25,800	150,100	17,961	80,825	27,450	82,830
Utah	10,371	190,808	29,704	623,207	34,635	695,622	36,536	664,280	39,790	786,300
Grand total	296,412	1,985,583	327,792	2,253,180	400,236	2,885,631	562,367	3,958,339	584,850	4,148,400

Bituminous rock.—Production of bituminous rock, which is used for road building, was reported in 1925 from Alabama, California, Kentucky, Oklahoma, and Texas. Missouri, which entered the ranks of the producers in 1924, made no production in 1925. Production and value for the United States in 1925, as measured by sales at the mines, increased 4 and 2 per cent, respectively.

Gilsonite.—The entire output of gilsonite, used chiefly in the manufacture of paints and rubber substitutes, was from Utah. The quantity increased 10 per cent and the value 27 per cent in 1925.

Wurtzilite.—Wurtzilite, sold frequently under the name "elaterite," was also produced in Utah only. This material is used mainly in paints, as a filler for rubber, and in roofing. The quantity produced in 1925 was virtually the same as in 1924 but the value decreased 24 per cent.

Grahamite and ozokerite.—No commercial production was reported for these commodities in 1925.

MANUFACTURED ASPHALT

The sales of asphalt manufactured from crude petroleum in the United States during 1925 were 3,178,370 short tons. Of this amount 1,206,700 tons, or 38 per cent, was obtained from domestic, and 1,971,670 tons, or 62 per cent, from foreign crude petroleum.

The refineries of the Atlantic seaboard ranked first in importance and sold 1,313,270 tons of asphalt or asphaltic material, 92 per cent of which was made from foreign petroleum. The district next in rank was the Gulf coast, with sales of 886,030 tons—86 per cent from foreign crude oil.

California, with sales of 515,980 tons and the inland refineries with 463,090 tons, all from domestic petroleum, make up the total for the country.

As usual, the output of solid products was of much more importance than that of the semisolid or liquid products, such as flux and road oil. The sales of paving asphalt, which comprises the major part of the solid class, amounted to 1,326,250 tons, valued at $19,218,690. This represents an increase over 1924 of 96,911 tons, or 8 per cent, and of $3,296,360, or 21 per cent. The sales of the class next in importance—roofing and waterproofing asphalt—were 854,100 tons in 1925, the value of which was $11,692,780. This represents only a slight increase in quantity over 1924, but a 15 per cent increase in value. The sales at refineries of mineral rubber in 1925 were 20,020 tons, a gain over 1924 of 53 per cent. The sales of flux and other liquid products in 1925 were lower than in 1924, due to a decline in paving flux. Road oil to the amount of 351,510 tons was sold at the refineries in the United States during 1925. This represents a gain of 24,191 tons, or 7 per cent, over 1924.

Asphalt and asphaltic material manufactured in the United States from petroleum and sold at refineries, 1924–25, by varieties

[Value f. o. b. refinery]

	From domestic petroleum		From foreign petroleum		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1924						
Solid and semisolid products of less than 200 penetration:[1]						
Asphalt—						
Paving	392,827	$5,435,225	836,512	$10,487,105	1,229,339	$15,922,330
Roofing and waterproofing	315,434	4,358,912	537,997	5,782,456	853,431	10,141,368
Mineral rubber	4,352	126,534	8,710	176,380	13,062	302,914
Other solid and semisolid products	50,831	601,084	120,426	1,162,724	171,257	1,763,808
	763,444	10,521,755	1,503,645	17,608,665	2,267,089	28,130,420
Semisolid and liquid products of more than 200 penetration:[1]						
Flux—						
Paving	109,218	1,098,380	73,935	689,209	183,153	1,787,589
Roofing and waterproofing	7,121	90,014	232,449	1,956,492	239,570	2,046,506
Other						
Other liquid products	61,945	585,554	295	2,171	62,240	587,725
	178,284	1,773,948	306,679	2,647,872	484,963	4,421,820
Road oil	216,728	2,009,304	110,591	1,454,256	327,319	3,463,560
Grand total	1,158,456	14,305,007	1,920,915	21,710,793	[2] 3,079,371	36,015,800
1925						
Solid and semisolid products of less than 200 penetration:[1]						
Asphalt—						
Paving	381,460	5,055,830	944,790	14,162,860	1,326,250	19,218,690
Roofing and waterproofing	383,400	5,469,400	470,700	6,223,380	854,100	11,692,780
Mineral rubber	7,420	211,820	12,660	188,290	20,020	400,110
Other solid and semisolid products	62,550	685,870	87,310	1,307,410	149,860	1,993,280
	834,830	11,422,920	1,515,400	21,881,940	2,350,230	33,304,860
Semisolid and liquid products of more than 200 penetration:[1]						
Flux—						
Paving	27,740	313,980	59,200	781,100	86,940	1,095,080
Roofing and waterproofing	108,950	1,277,130	280,740	3,206,050	389,690	4,483,180
Other						
Other liquid products						
	136,690	1,591,110	339,940	3,987,150	476,630	5,578,260
Road oil	235,180	2,291,730	116,330	1,650,920	351,510	3,942,650
Grand total	1,206,700	15,305,760	1,971,670	27,520,010	[2] 3,178,370	42,825,770

[1] Definitions:

Paving asphalt.—Refined native asphalt and asphaltic cement, fluxed and unfluxed, produced for direct use in the construction of sheet asphalt, asphaltic concrete, asphalt macadam, and asphalt block pavements, and also for use as joint filler in brick, block, and monolithic pavements.

Roofing and waterproofing asphalt.—Asphalt and asphaltic cement used in saturating, coating, and cementing felt or other fabric and in the manufacture of asphalt shingles.

Mineral rubber.—Asphalt and asphaltic cement used by the rubber industry.

Other solid and semisolid products.—Asphalt and asphaltic cement used as dips and in the manufacture of insulating material, acid-resisting compounds, putty, mastic, and briquets and not included in the preceding definitions.

Flux.—Liquid asphaltic material used in softening native asphalt or solid petroleum asphalt for paving, roofing, waterproofing, and other purposes.

Other liquid products.—Petroleum asphalt used in the manufacture of saturant, paint, varnish, or other coating, exclusive of fuel oil and not included in the preceding definitions.

Road oil.—Residual asphaltic oil used for surface treatment.

[2] The difference between this total and that reported in refinery statistics is due to differences in classification of liquid products; for example, road oil in the refinery statistics is classed as a miscellaneous product and not as asphalt.

IMPORTS AND EXPORTS

Imports of native asphalt and bituminous rock into the United States during 1925 amounted to 122,162 short tons, a decrease from 1924 of 24 per cent. As has been the case for many years, Trinidad and Tobago led in this trade, with Venezuela second. Exports of native (unmanufactured) and petroleum asphalts amounted to 121,849 short tons in 1925.

Native asphalt and bituminous rock imported into the United States, 1922–1925, by countries

[General imports]

Country	1922		1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
North America:								
Bermuda							4	$428
Canada	52	$2,251	147	$3,358	1,275	$17,105	9	920
Mexico	3	25	3	95			(1)	25
West Indies:								
British—								
Barbados	36	6,590	126	16,260	20	2,430	76	5,123
Jamaica							836	8,360
Trinidad and Tobago	85,480	721,891	97,252	688,221	84,282	666,669	76,820	526,999
Other	1,120	11,200	560	14,850	134	600	58	1,336
Cuba	113	2,711	282	7,933	346	9,203	2,323	60,535
Dominican Republic			15	2,545				
South America:								
Argentina			8	768			11	182
Colombia	(1)	5	18	468	55	627	22	1,473
Venezuela	37,449	247,920	37,320	246,572	73,309	490,895	37,160	246,558
Europe:								
Belgium	(1)	3	3	124				
Denmark	49	1,516						
France	39	948						
Germany	312	4,481	1,393	18,009	902	12,123	1,465	19,817
Italy			2	1,010	11	1,322		
Netherlands					(1)	5	1	12
Spain			8	208				
Switzerland			(1)	95	1	233	3	185
United Kingdom	6	920	7,498	79,390	77	1,236	3,367	34,633
Asia:								
Palestine and Syria					7	711	7	838
Philippine Islands	(1)	2						
	124,659	1,000,463	144,635	1,079,906	160,419	1,203,159	122,162	907,424

[1] Figures for quantity not available.

Ozokerite and other mineral waxes imported for consumption in the United States, 1916–1925

Year	Pounds	Value	Year	Pounds	Value
1916	3,007,676	$196,185	1921	8,548,542	$546,054
1917	899,405	90,510	1922	8,989,972	371,161
1918	1,809,459	147,805	1923	4,856,357	213,407
1919	3,748,080	454,840	1924	3,113,819	207,833
1920	4,272,341	499,758	1925	6,175,184	361,767

Ichthyol and ichthyol substitutes imported for consumption in the United States, 1916–1925

Year	Pounds	Value	Year	Pounds	Value
1916	116,738	$93,762	1921	76,020	$107,752
1917	58,397	36,232	1922	74,330	89,150
1918	65,752	39,452	1923 [1]	20	15
1919	30,976	38,975	1924	9,300	17,058
1920	98,135	79,133	1925	560	1,281

[1] As recorded by Bureau of Foreign and Domestic Commerce. Change in classification under new tariff may account to some extent for great decrease.

Native asphalt and related bitumens exported from the United States, 1916–1925

Year	Unmanufactured		Manufactures of	Total
	Short tons	Value		
1916	40,816	$759,769	$494,895	$1,254,664
1917	30,107	587,256	585,472	1,172,728
1918	22,108	577,654	577,936	1,155,590
1919	40,208	1,103,930	606,918	1,710,848
1920	51,706	1,356,116	842,074	2,198,190
1921	45,367	1,178,038	621,224	1,799,262
1922	57,362	1,344,440	[1] 1,261,125	2,605,565
1923	72,628	1,500,869	[1] 2,075,628	3,576,497
1924	52,568	1,245,670	[1] 2,212,260	3,457,930
1925	32,835	825,654	[1] 2,525,618	3,351,272

[1] Inclusive of value of squares (10 by 10 feet) of roofing asphalt as follows: 1922, 588,636 squares, $870,200; 1923, 783,028 squares, $1,124,491; 1924, 697,293 squares, $998,469; 1925, 661,662 squares, $919,977. Corresponding exports not separately shown prior to 1922

Asphalt exported from the United States in 1925, by countries

Country	Native asphalt and bitumen				Petroleum asphalt	
	Unmanufactured		Manufactures of, except roofing		Short tons	Value
	Short tons	Value	Short tons	Value		
North America:						
Canada	5,848	$117,507	3,727	$121,460	2,194	$37,318
Central America—						
British Honduras					3	107
Costa Rica			5	883		
Guatemala			2	334	1	13
Nicaragua			1	177	127	2,711
Panama	225	4,459	515	22,763	53	1,620
Salvador	1	35	12	1,101	280	6,700
Mexico	97	3,087	1,206	25,616	60	1,520
New Foundland and Labrador			7	439		
West Indies—						
British—						
Barbados			1	20		
Jamaica	49	1,866	1,550	63,701		
Other			106	11,712	19	506
Cuba	852	22,541	3,310	90,972	1	120
Dominican Republic	27	870	564	16,418	2	51
Dutch			[1]	89		
Haiti	128	2,703	4	239		
South America:						
Argentina	983	20,193	818	27,138	293	7,579
Bolivia	48	1,091	1	264		
Brazil	1	109	927	34,042	609	15,483
Chile	72	2,932	609	23,651	212	4,645
Colombia	75	2,564	1,212	31,490	457	9,475
Ecuador	169	3,086	174	5,079		
Peru	6	169	198	6,960	45	1,131
Uruguay	301	15,213	1,740	90,404	69	1,910
Venezuela	17	559	26	1,866		
Europe:						
Belgium	305	8,451	544	14,510	407	8,448
Denmark	620	11,945	890	30,645	311	6,696
Finland	24	594	57	4,136		
France	1,580	60,838	1,016	32,521	1,478	31,951
Germany	9,019	225,152	2,106	55,472	4,511	79,451
Greece			72	1,577		
Irish Free State	28	579	141	4,386	259	9,772
Italy	500	14,491	313	14,349	55	1,232
Netherlands	725	24,914	100	6,316	93	3,294
Norway	25	790	324	8,820	21	552
Russia			12	739	1	58
Spain	65	1,417	518	20,518	38	787
Sweden	97	3,256	571	15,229	234	3,911
Switzerland			1	28		
Turkey			1	406		
United Kingdom	8,286	213,355	12,977	403,375	17,676	382,990

[1] Less than 1 ton.

Asphalt exported from the United States in 1925, by countries—Continued

Country	Native asphalt and bitumen				Petroleum asphalt	
	Unmanufactured		Manufactures of, except roofing		Short tons	Value
	Short tons	Value	Short tons	Value		
Asia:						
Ceylon			1,084	$48,713	11	$337
China	34	$651	603	28,747	8,443	154,906
East Indies—						
British—						
India	35	978	2,876	110,344	1,290	33,081
Straits Settlements	468	8,515	(1)	11	2,201	42,665
Dutch	75	1,406	2	107	22	674
Indo-China (French)					922	18,020
Hongkong	7	202			3,849	73,762
Japan	274	11,510	207	8,361	6,859	147,280
Java and Madura	627	10,930	202	9,491	11,449	210,583
Kwantung			58	6,875	12	337
Philippine Islands	50	1,513[2]	282	9,545	1,670	32,298
Siam					7	202
Africa:						
British—						
East			341	12,186		
South	883	18,065	2,447	92,121	3,114	62,524
West			(1)	54		
Canary Islands			(1)	10		
Egypt			61	10,849		
French—Algeria and Tunisia			3	460		
Morocco			1	97	11	360
Portuguese East	6	713	193	6,313	44	794
Oceania (British):						
Australia	199	6,257	1,335	54,961	8,769	161,630
New Zealand	4	148	248	15,982	10,805	202,040
Other			23	569	27	524
	32,835	825,654	46,324	1,605,641	89,014	1,762,048

[1] Less than 1 ton.

WORLD'S PRODUCTION[1]

Natural asphalt and related bitumens produced in the principal producing countries, 1921–1925, in metric tons [2]

Country [3]	1921	1922	1923	1924	1925
Barbados [4]	111	133	152	(5)	(5)
Canada (Alberta)[6]				482	1,041
Cuba [7]	342	109	2,098	3,643	(5)
France	39,595	48,477	40,292	44,865	49,505
Germany	29,352	54,619	46,244	57,359	(5)
Greece	486	410	1,300	(5)	(5)
Italy	94,120	68,647	151,908	187,244	273,668
Japan	365	280			(5)
Peru	11,834	8,829	(5)	2,708	(5)
Philippine Islands	766			(5)	(5)
Poland [8]	260	414	710	732	630
Rumania	14,122	13,016	21,967	19,731	(5)
Spain	3,533	5,933	3,936	5,476	5,580
Switzerland	17,394	22,045	[7] 19,904	[7] 33,150	(5)
Trinidad	121,651	185,587	224,900	227,460	204,335
United States	268,899	297,366	363,086	510,168	530,564
Venezuela	48,489	38,476	33,321	69,892	33,679

[1] Compiled by L. M. Jones, of the Bureau of Mines.
[2] Minerals included are native asphalt, asphalt rock, asphaltite, manjak, ozokerite, and bituminous rock used for other purposes than the extraction of oil. Oil shales, including ichthyolic shale, are not included.
[3] In addition to those listed, the following countries are reported to produce asphalt and related bitumens, but figures of output are not available: Albania, Argentina, Iraq, Madagascar, Russia, and Syria.
[4] Exports of manjak.
[5] Data not available.
[6] Bituminous sands.
[7] Exports.
[8] Ozokerite.

PRODUCERS

NATIVE ASPHALT AND RELATED BITUMENS

Production of native asphalt and related bitumens was reported in this country in 1925 by the following operators:

Absopure Gilsonite Co., 615 Cooper Building, Denver, Colo.
Acme Rock Asphalt Co., Fullerton Building, St. Louis, Mo.
Alabama Rock Asphalt Co., Florence, Ala.
American Asphalt Association, 919 Wainwright Building, St. Louis, Mo.
City Street Improvement Co., 400 California Street, San Francisco, Calif.
Colbert Limerock Asphalt Co., Cherokee, Ala.
Crown Rock Asphalt Co., 911 Neave Building, Cincinnati, Ohio.
Diamond Gilsonite Co., Fort Duchesne, Utah.
Garfield Rock Asphalt Co., 311 Norton Building, Louisville, Ky.
Gilson Asphaltum Co., 1900 Land Title Building, Philadelphia, Pa.
Kentucky Rock Asphalt Co., Marion E. Taylor Building, Louisville, Ky.
Natural Rock Asphalt Corporation, Owensboro, Ky.
Ohio Valley Rock Asphalt Co., Schmidt Building, Cincinnati, Ohio.
Raven Mining Co. of Utah, 140 South Dearborn Street, Chicago, Ill.
Robert M. Lucas Mines Co., 1955 West Thirty-first Street, Chicago, Ill.
Texas Rock Asphalt Co., San Antonio, Tex.
Utah Gilsonite Co., Wainwright Building, St. Louis, Mo.
Uvalde Rock Asphalt Co., San Antonio, Tex.
Western Paving Co., Tradesman's Building, Oklahoma City, Okla.
White's Uvalde Mines, City National Bank Building, San Antonio, Tex.

MANUFACTURED ASPHALT

The following operators reported the production of asphaltic material from crude petroleum in the United States in 1925:

Atlantic Refining Co., 260 South Broad Street, Philadelphia, Pa.
Barber Asphalt Co., 1900 Land Title Building, Philadelphia, Pa.
Beacon Oil Co., 111 Devonshire Street, Boston, Mass.
Freeport Asphalt Co., Freeport, Tex.
Gulf Refining Co., Frick Building Annex, Pittsburgh, Pa.
Harbor Refining Co., 2475 East Ninth Street, Los Angeles, Calif.
Indian Refining Co., Lawrenceville, Ill.
Louisiana Oil Refining Corporation, Shreveport, La.
Magnolia Petroleum Co., Box 1667, Dallas, Tex.
Mexican Petroleum Corporation of Louisiana (Inc.), 120 Broadway, New York, N. Y.
Midwest Refining Co., Denver, Colo.
New Orleans Refining Co., United Fruit Building, New Orleans, La.
Pan American Petroleum Co., 1034 Petroleum Securities Building, Los Angeles, Calif.
Paraffine Companies (Inc.), 475 Brannon Street, San Francisco, Calif.
Pioneer Asphalt Co., Lawrenceville, Ill.
Producers Refining Co., Box J, Bakersfield, Calif.
Roxana Petroleum Corporation, Shell Building, St. Louis, Mo.
Seaside Oil Co., Summerland, Calif.
Sinclair Refining Co. of Louisiana, 45 Nassau Street, New York, N. Y.
Standard Oil Co. of California, 225 Bush Street, San Francisco, Calif.
Standard Oil Co. of Indiana, 910 South Michigan Avenue, Chicago, Ill.
Standard Oil Co. of Louisiana, Baton Rouge, La.
Standard Oil Co. of New Jersey, 26 Broadway, New York, N. Y.
Standard Oil Co. of New York, 26 Broadway, New York, N. Y.
Standard Oil Co. of Ohio, East Ohio Gas Building, Cleveland, Ohio.
Sun Oil Co., 1428 South Penn Square, Philadelphia, Pa.
Texas Co., Houston, Tex.
Tidewater Oil Co., 11 Broadway, New York, N. Y.
Union Oil Co. of California, Union Oil Building, Los Angeles, Calif.
Warner Quinlan Co., 79 Wall Street, New York, N. Y.

THE ASPHALT ASSOCIATION

The members of the asphalt industry established in 1919 the Asphalt Association, which, in addition to other activities, is engaged in collecting and disseminating information useful to both producers and users of asphalt. The address of the association is 441 Lexington Avenue, New York, N. Y. Branch offices are at the following addresses:

729 Hearst Building, Hearst Square, Chicago, Ill.
Whitney Central Building, New Orleans, La.
314 Dwight Building, Kansas City, Mo.
25 North Pearl Street, Albany, N. Y.
302 Latta Arcade Building, Charlotte, N. C.
Excelsior Life Insurance Building, Toronto, Ontario, Canada.

The officers are: President, C. G. Sheffield, of the Standard Oil Co. of New York; vice president, L. M. Law, of the New Orleans Refining Co.; treasurer, Herbert Spencer, of the Standard Oil Co. of New Jersey; secretary and general manager, J. E. Pennybacker.

FELDSPAR

By Jefferson Middleton [1]

GENERAL CONDITIONS

During 1925 the feldspar industry made real advances in the settlement of problems that confront both the producer and consumer, although the quantity and the value of crude feldspar produced were lower than in 1924. Notable features of the year were a trip by some of the large consumers to the producing regions of North Carolina and the merging of two large producers of crude and ground spar, that have interests in both the New England and southern fields—the Erwin Feldspar Co. (Inc.) and the Golding Sons' Co. The production of crude spar in 1925, following overproduction in 1924, and in spite of smaller imports, decreased 9 per cent. The quantity of ground spar sold by merchant mills, on the other hand, increased considerably—12 per cent—but the average value per ton of both crude and ground domestic spar was lower than in 1924. Several mills were added to the already growing list, and the addition of further grinding plants is promised for 1926. The value of the total output of ground feldspar increased 10 per cent compared with 1924.

Imports of crude feldspar decreased in even greater proportion than did production. In 1925 they constituted less than one-eighth of the total supply of feldspar.

An interesting contribution to the literature on feldspar appeared in the Ceramist.[2] It describes the character, composition, occurrence, and uses of feldspar, and the mining and milling methods employed. Efforts to use feldspar as a source of supply of potash on a commercial scale continue in this country and Europe, but with as yet unestablished claims of success.

PRODUCTION

Statistics of production of feldspar are presented separately for crude feldspar, or mine and quarry output, and for ground feldspar, or mill output. The crude feldspar is reported in long tons

[1] Figures on imports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

[2] Myers, W. M., "The mining and preparation of feldspar and flint": The Ceramist, Newark, N. J., vol. 6, May, 1925, pp. 438–451.

of 2,240 pounds and the ground feldspar in short tons of 2,000 pounds, according to the common practice in the industry. The average value of crude feldspar in 1925 at the mine or the shipping point nearest thereto was $7.08 a long ton or 29 cents lower than that of 1924. The average value of ground domestic feldspar was 51 cents a short ton lower than in 1924, and that of Canadian spar ground in the United States was 69 cents a ton higher. The average values of crude spar as reported by individual producers ranged from $2.79 to $12 a long ton. For New England the range was from $5 to $12; for Maryland, New York, Pennsylvania, and Virginia, from $2.79 to $8.96; for North Carolina, from $4.69 to $8.80; and for Arizona, California, Colorado, and South Dakota, from $4.21 to $10.64.

CRUDE FELDSPAR

Crude feldspar was reported from 12 States in 1925, the same as in 1924. Connecticut was the only important producing State that showed an increase in production and value. Maryland's quantity decreased but its value increased.

Crude feldspar sold or used by producers in the United States, 1916–1925

Year	Long tons	Value	Year	Long tons	Value
1916	118,465	$404,689	1921	91,865	$617,652
1917	126,715	474,767	1922	117,127	844,568
1918	88,498	429,989	1923	145,004	1,057,595
1919	63,441	347,992	1924	204,772	1,509,339
1920	135,551	851,123	1925	185,706	1,315,654

Crude feldspar sold or used by producers in the United States, 1924–25, by States

State	1924			1925		
	Long tons	Value [1]		Long tons	Value [1]	
		Total	Average		Total	Average
California	8,027	$62,344	$7.77	6,077	$49,881	$8.21
Connecticut	6,572	51,422	7.82	10,426	71,201	6.83
Maine	29,912	271,354	9.07	28,404	256,731	9.04
Maryland	4,854	25,020	5.15	4,554	26,438	5.81
New Hampshire	39,425	324,638	8.23	38,366	278,736	7.27
New York	13,839	108,751	7.86	10,474	70,446	6.73
North Carolina	97,075	640,403	6.60	76,806	496,563	6.47
Pennsylvania	1,481	4,763	3.22	1,330	4,722	3.55
Undistributed [2]	3,587	20,644		9,269	60,936	
	204,772	1,509,339	7.37	185,706	1,315,654	7.08

[1] Value at mine or nearest shipping point.
[2] Arizona, Colorado, South Dakota, and Virginia.

GROUND FELDSPAR

Probably all the feldspar consumed industrially, except that used for facing cement work, for covering prepared roofing, for "chicken grits," and like purposes, is prepared by fine grinding. Even for such uses the spar is at least crushed to small sizes and more or less graded by screening, but it has not been possible to canvass all users of feldspar to determine the amounts ground and used by them. All known merchant mills or grinders—that is, those who quarry or purchase crude spar and grind it for sale to other establishments—have been canvassed for statistics of ground feldspar during the last four years.

For 1925, 33 operators in 13 States reported 212,858 short tons of ground feldspar, an increase of 3 operators compared with 1924. The same number of States reported for 1924 and 1925, but in 1925 Colorado entered and Delaware dropped from the list of grinders of feldspar. Of these operators 26 worked exclusively on domestic spar, 4 on Canadian spar, and 3 ground both domestic and Canadian spar. Of the total quantity 87 per cent (184,816 tons) was domestic spar and 13 per cent (28,042 tons) was Canadian spar—virtually the same proportion that has held for several years.

The average value per ton of ground domestic feldspar f. o. b. mills in 1925 was $16.33, a decrease of 51 cents a ton compared with 1924; and of Canadian spar $20.90, an increase of 69 cents a ton compared with 1924. Direct comparisons of values are misleading, however, as the figures for Canadian spar generally relate to high-grade materials at mills near points of consumption, whereas the figures for domestic spar cover all grades at various points, many of which are distant from consuming centers. Tennessee is the leading producer of domestic ground spar, reporting one-third of the production for 1925; New Jersey was second, with 21 per cent of the total; and Maine third, with 14 per cent. New York reported 88 per cent of the Canadian spar ground in this country. The average value per ton of spar ground in Tennessee was $12.95, in New Jersey $19.41, and in Maine $18.76. Average values as reported by producers ranged from $9 a ton in New York to $22.88 a ton in New Jersey.

New mills were established during the year in California, Colorado, Maine, and New York.

Ground feldspar sold by merchant mills[1] in the United States, 1922–1925

Year	Number of operators	Domestic			Canadian			Total		
		Short tons	Value		Short tons	Value		Short tons	Value	
			Total	Average		Total	Average		Total	Average
1922	20	107,969	$1,790,305	$16.58	19,075	$364,082	$19.09	127,044	$2,154,387	$16.96
1923	26	151,855	2,486,810	16.38	25,374	486,546	19.17	177,229	2,973,356	16.78
1924	30	163,905	2,760,286	16.84	25,875	522,884	20.21	189,780	3,283,170	17.30
1925	33	184,816	3,017,845	16.33	28,042	586,000	20.90	212,858	3,603,845	16.93

[1] Does not include potters and others who grind for consumption in their own plants.

Ground feldspar sold by merchant mills[1] in the United States, 1924–25, by States

	1924					1925				
	Number of operators	Domestic		Canadian		Number of operators	Domestic		Canadian	
		Short tons	Value	Short tons	Value		Short tons	Value	Short tons	Value
California	3	2,180	$46,387			4	6,524	$133,284		
Connecticut	3	2,741	46,927			2	[2]	[2]		
Maine	3	24,411	465,107			4	26,514	497,348		
New Jersey	3	30,602	645,108			3	39,028	757,339		
New York	4	[2]	[2]	22,150	$445,757	5	8,386	96,129	[3]24,756	[3]$529,796
Ohio	4	[2]	[2]	3,725	77,127	4	[2]	[2]	3,286	56,204
Tennessee	4	52,571	697,962			4	62,137	804,741		
Undistributed [4]	6	51,400	858,795			7	42,227	729,004		
	30	163,905	2,760,286	25,875	522,884	33	184,816	3,017,845	28,042	586,000

[1] Does not include potters or others who grind for consumption in their own plants.
[2] Included under "Undistributed."
[3] Includes a small amount from Pennsylvania.
[4] 1924: Delaware, Illinois, Maryland, New Hampshire, New York, North Carolina, Ohio, and Pennsylvania; 1925: Colorado, Connecticut, Illinois, Maryland, New Hampshire, North Carolina, Ohio, and Pennsylvania.

THE INDUSTRY BY STATES

The production of crude feldspar in 1925 was reported from 12 States, which were, in the order of their production: North Carolina, New Hampshire, Maine, New York, Connecticut, California, Maryland, South Dakota, Virginia, Arizona, Pennsylvania, and Colorado. This relative order is nearly the same as that of 1924. California, which was fifth in 1924 and sixth in 1925, exchanged places with Connecticut, which became fifth in 1925. Pennsylvania was ninth in 1924 and eleventh in 1925, exchanging places with Virginia. Feldspar was ground in each of the producing States except Arizona, South Dakota, and Virginia. In addition, mills grinding feldspar were operated in Illinois, New Jersey, Ohio, and Tennessee. In California, New Jersey, New York, and Ohio the mills are at or near the centers of consumption; in most of the other States they are near the points of production.

Arizona.—The deposit of feldspar near Kingman, Mohave County, was operated by the Kingman Feldspar Co. The material found its principal use in the ceramic industry in California in increasing quantity.

California.—Six operators in Riverside and San Diego Counties reported production of crude feldspar in 1925. The quantity and value decreased compared with 1924. One new grinding mill was established in this State. The quantity and value of ground spar nearly trebled compared with 1924. California ranked sixth and seventh in the production of crude and ground spar, respectively, in 1925.

Colorado.—One new operator reported. Another company was engaged in development work and will probably be in operation during 1926. For the first time Colorado reported the sale of ground feldspar, two mills reporting sales. The production of crude spar in 1925 was more than four times as large as in 1924.

Connecticut.—Connecticut ranked fifth in the production of crude feldspar in 1925, nine operators reporting sales. The quantity of crude spar increased 59 per cent and its value 38 per cent, compared with 1924. The product of the quarries of L. W. Howe and the Tidewater Feldspar Co. was ground in mills operated by these producers; the greater part of the output of the other quarries was shipped to mills at Trenton, N. J., and East Liverpool, Ohio, where it was ground for ceramic use.

Illinois.—The mill established at Murphysboro in 1924 by the Isco-Bautz Co. (Inc.) continued running on feldspar from South Dakota.

Maine.—In 1925 Maine ranked third among the States in the production of crude feldspar but showed a decrease of 5 per cent in quantity and value compared with 1924. Androscoggin, Cumberland, Oxford, and Sagadahoc were the producing counties. The Maine Feldspar Co. is the largest producer of both crude and ground feldspar. During the year the Oxford Mining & Milling Co. established a mill at Bates, Oxford County. Maine also ranked third in the quantity of domestic ground feldspar sold in 1925.

Maryland.—The production of crude feldspar in Maryland in 1925 showed a decrease of 6 per cent in quantity but an increase of 6 per cent in value compared with 1924. Most of the output was made by a number of small producers who sold to the Seaboard Feldspar Co., of Baltimore, which has the only mill in the State.

New Hampshire.—New Hampshire was the second largest producer of crude feldspar in 1925 as in 1924, and reported 21 per cent of both total quantity and value in 1925. The Golding-Keene Co. and the Standard Feldspar Co. were the largest producers. New Hampshire's product was used in the ceramic and soap industries. The Golding-Keene Co. operated the only mill in the State.

New Jersey.—New Jersey produces no crude feldspar and its connection with the feldspar industry is through its mills. At Trenton are the mills of the Eureka Flint & Spar Co., the Golding Sons' Co., and the Trenton Flint & Spar Co. These mills reported more than one-fifth of the domestic ground spar sold in 1925. Trenton is one of the chief feldspar markets and one of the principal centers of feldspar consumption by reason of its large pottery industry and the capacity of the mills. According to a press notice a new mill has recently been established at Trenton that will be operated under the name of The Standard Flint & Spar Corporation.

New York.—New York ranked fourth in the quantity of crude feldspar produced and sixth in the production of ground spar from domestic material. It is the largest grinder of spar from Canada and ranks third in the total production of ground spar. Its production of crude spar in 1925 came from Fulton, St. Lawrence, and Westchester Counties, and was mined by the United States Feldspar Corporation (a new company), the Green Hill Mining Co., and the Bedford Mining Co. (Inc.), respectively. There were five grinding mills in operation in the State. Those of the Bedford Mining Co. (Inc.) and the United States Feldspar Corporation ground only domestic spar; those of the Genesee Feldspar Co. (Inc.) and Dominion Feldspar Corporation ground Canadian spar only; and the New York Feldspar Corporation ground both domestic and Canadian spar.

North Carolina.—North Carolina was the largest producer of crude feldspar in 1925, as it has been for several years, its output being twice as large as that of New Hampshire, the second State. Production showed a decrease of 20,269 tons, or 21 per cent, and $143,840, or 22 per cent, compared with 1924. Notwithstanding this decrease the output of 1925 was a third larger than that of 1923 and two and one-half times as great as that of 1916. North Carolina's output constituted 41 per cent of the total quantity and 38 per cent of the total value for 1925. This output was made by numerous small operators who sell or barter the spar to some central distributing agency. Some of the larger buyers and distributors are the Erwin Feldspar Co. (Inc.), the Clinchfield Products Corporation, the Carolina Mineral Co., and J. C. Pitman. Most of the spar was produced in Mitchell and Yancey Counties along the line of the Clinchfield Railroad Co. Avery and Buncombe Counties also produced feldspar in 1925.

Ohio.—No feldspar is produced in Ohio, but as this State and the adjacent territory in Pennsylvania and West Virginia produce more than one-half of the high-grade pottery made in the United States the region is a very large consumer of feldspar. The potteries are partly supplied by the mills within the State operated by the Cleveland Feldspar & Products Co., at Cleveland; the Golding Sons' Co. and the Potters Mining & Milling Co., at East Liverpool; and the Rock Products Co., at Silica, near Toledo. The Golding Sons' Co. ground only domestic spar in 1925, the Potters Mining & Milling Co. and Rock Products Co. ground only Canadian spar, and the Cleveland Feldspar & Products Co. ground both domestic and foreign spar.

Pennsylvania.—Four operators reported the production of crude feldspar in 1925, an increase of one compared with 1924. Most of these operators were small and the total output decreased 10 per cent in quantity and 1 per cent in value compared with 1924. The average value per ton of feldspar produced in this State in 1925 was $3.55, the lowest in the country. The only mill in the State was operated by the American Feldspar Co., at Toughkenamon. A small quantity of Canadian spar was ground at this mill in 1925.

South Dakota.—The output of feldspar in South Dakota in 1925 was reported by the Keystone Feldspar & Chemical Co., which has a quarry at Keystone, Pennington County. The Dakota Feldspar Co., with a quarry at Pringle, Custer County, reported development work during 1925 and the probability of shipments early in 1926.

Tennessee.—Tennessee is another important State in the domestic feldspar industry that has no feldspar quarries. Its northeastern border, however, is near the North Carolina feldspar region and the Clinchfield Railroad, which traverses northeastern Tennessee and southwestern North Carolina, offers the natural outlet for that region. Consequently, although local grinding of feldspar did not begin until 1914, the State now contains the largest feldspar-grinding center in the country, there being three mills at Erwin operated by the Clinchfield Products Corporation, the Erwin Feldspar Co. (Inc.), and the Golding Sons' Co., and one mill at Bristol operated by the Tennessee Mineral Products Co. These mills reported one-third of the output of ground domestic feldspar in 1925.

Virginia.—The Seaboard Feldspar Co., of Baltimore, Md., and R. Q. Young, of Moneta, Va., worked feldspar quarries in Virginia in 1925. The product is described as a high-grade potash spar, which was used in the manufacture of soap and high-tension insulators. Both quarries are at Moneta, Bedford County.

IMPORTS

The foreign trade of the United States in feldspar is small and is limited largely to imports from Canada. Before the tariff act of 1922 imports of feldspar were not specifically classified in the official records and are therefore unknown. The following table, taken from records of the Bureau of Foreign and Domestic Commerce, shows the imports since then.

Crude feldspar imported for consumption in the United States, 1922–1925

Year	Long tons	Value	
		Total	Average
1922 (Sept. 22–Dec. 31)	7,549	$60,111	$7.96
1923	24,271	184,924	7.62
1924	35,139	284,716	8.10
1925	24,994	203,524	8.14

FOREIGN PRODUCTION

A considerable part of the supply of feldspar annually available for the ceramic and other feldspar-consuming industries in the United States is mined in Canada. According to reports of the Dominion Bureau of Statistics the Canadian shipments—all from Ontario and Quebec—amounted in 1925 to 23,189 long tons, valued at $214,479, or $9.25 a ton, a decrease of 42 per cent in quantity and 40 per cent in value compared with 1924. The sales of Canadian spar ground in the United States in 1925 constituted 13 per cent of all ground spar sold in this country in that year, a proportion about the same as that for several years preceding.

Feldspar, produced in Canada, sold in 1916–1925

Year	Long tons	Value	Year	Long tons	Value
1916	17,400	$71,407	1921	26,668	$230,754
1917	17,377	89,826	1922	24,756	248,402
1918	16,770	112,728	1923	26,094	237,601
1919	13,106	86,231	1924	40,004	358,540
1920	33,815	280,895	1925	23,189	214,479

The following table prepared by L. M. Jones, of the Bureau of Mines, shows the most recent figures for the production of feldspar in the principal producing countries. Besides the United States and Canada, Germany, Norway, and Sweden are the chief producers. Although the United Kingdom has an immense pottery industry, it appears to be a small producer of feldspar. Cornwall stone

rather than feldspar is extensively used as a flux in the British pottery industry.

Feldspar produced in principal producing countries, 1921–1925, in metric tons

Country	1921	1922	1923	1924	1925
Australia:					
New South Wales	25	25	13	15	33
South Australia			20		10
Western Australia (exports)	1	61			(1)
Canada	27,096	25,153	26,512	40,645	23,561
Finland	957	1,322	(1)	(1)	(1)
France	4,625	2,000	4,980	(1)	(1)
Germany (Bavaria)	7,249	6,080	8,986	33,138	10,258
Italy	2,460	2,790	5,070	5,200	3,400
Japan	(1)	16,051	22,947	(1)	(1)
Norway (exports)	9,348	11,833	13,073	20,875	(1)
Russia	673	685	(1)	(1)	(1)
Sweden	20,169	22,371	16,857	19,309	(1)
United Kingdom	1,107	843	3,298	1,070	(1)
United States	93,339	119,007	147,331	208,059	188,687

[1] Data not available.

GRAPHITE

By Jefferson Middleton[1]

INTRODUCTION

In 1925 the graphite industry in the United States declined on the whole, although the number of States reporting, the number of operators, and the value of the output were all larger than in 1924. No new developments of any consequence were reported. In Alabama, which at one time was the largest producer of crystalline graphite, production has virtually ceased. Nearly all of the 30 plants that were in operation there in 1918 have been abandoned or dismantled, and only one operator reported sales in 1925. In New York, formerly a large producer, operations have ceased entirely. In Texas the producing company reports that its plant is working 20 hours a day, and its highly standardized uniform product is finding a ready market. Montana reentered the list of producing States in 1925 with a small output of high-grade graphite. The chief reason for the decline in the crystalline graphite industry in the United States is the inability of the domestic producer to compete successfully with the high-grade foreign product by cheap labor, though the prejudice of consumers against domestic graphite no doubt has been an important factor in the present condition of the industry.

The price of imported graphite continued high throughout 1925 and will probably remain high because of the exhaustion of stocks and the increased cost of new production in the foreign fields. The high price of imported graphite is shown by the fact that though the quantity imported in 1925 increased 9 per cent, its value increased 107 per cent compared with 1924. The production of artificial graphite increased 10 per cent in 1925 compared with 1924.

The Engineering and Mining Journal-Press of May 1, 1926, page 734, in reply to an inquiry as to the quality of the graphite listed in its quotations, published the following:

> There are no exact standards for these different grades and classifications, nor is one product used for a given purpose to the exclusion of all others. However, the following data * * * should give a general idea of the situation:
>
> 1. Ceylon lump is a sorted product and usually contains about 90 per cent graphitic carbon. Chip ranges around 80 per cent, and dust about 70 per cent.
>
> 2. The bulk of Ceylon lump and chip is used for crucible manufacture. Other uses are lubricants, pencils and paint, foundry facings, stove polish, electrodes and brushes for the electric industry, fillers for dry batteries, and steam-boiler mixtures.

[1] Figures on imports and exports were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

3. "Crude amorphous" is not suitable for crucible manufacture, but will do for the other purposes mentioned above. The most important use from the standpoint of quantity is for foundry facings.

4. Lubricating graphite obviously must be free from grit or the bearings would be injured. It may be of actually higher grade than crucible graphite, or it may be of lower grade; but the impurities must not be abrasive. Preparations designed for lubrication sometimes are used for other purposes, but probably not in large quantity. The grades No. 1 and No. 2 refer to the size of the flakes but the value does not necessarily depend on this feature. The selection of flake size is often a matter of taste.

5. In these grades [extra fine ground, medium fine ground, and facings] the graphitic carbon content may be as low as 40 or 45 per cent for many purposes.

Foundry facings need not be ground particularly fine; but for some uses the product must be so well pulverized that 99 per cent will pass a 200-mesh screen.

The uses [of these grades] are those already enumerated, excepting, of course, the making of crucibles.

The raw material may be imported or domestic crystalline or amorphous. Amorphous or Ceylon dust is generally preferred for foundry facings, though ground flake also is used.

USES

Natural graphite is used chiefly in the manufacture of foundry facings, pigments and paints, crucibles, pencils and crayons, and commutator brushes. The following table was compiled by the United States Tariff Commission as the result of an investigation to determine the consumption by uses of graphite in the United States, and it is published with the consent of the commission. The data cover the operations of 27 of the 30 known manufacturers of graphite products. The three that gave no information are of minor importance and their omission is believed not to affect materially the results. The distribution to the various uses shown in the table involves estimates that were based on well-determined factors and may be considered accurate within fairly close limits. Contrary to general opinion the use of graphite in the manufacture of crucibles in the years covered by the investigation was comparatively small. Only 15 per cent of the consumption for finished products went to this use in 1923 and 13 per cent in 1924. Foundry facings consumed the largest proportion—44 per cent in 1923 and 52 per cent in 1924. Pigments and paints were second in the quantity of graphite consumed—16 per cent in 1923 and 18 per cent in 1924. The manufacturers of pencils and crayons and of commutator brushes ranked fourth and fifth as consumers of graphite, each taking 9 per cent in 1923 and 5 per cent in 1924. These five products used 91 per cent of the total in 1923 and 93 per cent of it in 1924. Only three uses, all minor, showed increases in 1924 as compared with 1923. Graphite for bearings and bushings and for lubricants commands the highest prices.

Graphite consumed in the United States, 1923 and 1924, by uses (stocks on hand neglected)

Use	1923			1924		
	Short tons	Value		Short tons	Value	
		Total	Cents per pound		Total	Cents per pound
Finished product:						
Facings	14,633	$854,988	2.9	13,924	$763,757	2.7
Pigments and paints	5,256	286,597	2.7	4,875	281,933	2.9
Crucibles—						
Brass	3,414	377,522	5.5	2,830	315,896	5.6
Steel	1,517	240,203	7.9	629	92,433	7.3
Pencils and crayons	2,965	156,992	2.6	1,416	67,738	2.4
Commutator brushes	2,867	149,794	2.6	1,313	62,732	2.4
Stove polish	760	45,228	3.0	406	19,134	2.4
Lubricants	538	136,505	12.7	365	105,623	14.5
Retorts	344	30,229	4.4	291	22,532	3.9
Bearings and bushings	448	116,261	13.0	282	84,723	15.0
Shot and powder polish	95	5,289	2.8	104	6,110	2.9
Roof dust	84	4,862	2.9	90	5,215	2.9
Dry batteries	84	4,862	2.9	90	5,215	2.9
Packings	106	6,491	3.1	88	6,239	3.5
Boiler compounds	92	10,209	5.5	79	7,642	4.8
Dashpots and plungers	75	3,886	2.6	61	5,285	4.3
Electrotype dust	47	5,401	5.7	46	6,821	7.4
Ladle stoppers	147	15,005	5.1	43	4,527	5.3
Electrodes	39	2,133	2.7	37	2,110	2.9
	33,511	2,452,457	3.7	26,969	1,865,665	3.5
Semifinished product	6,070	432,741	3.6	5,336	336,013	3.1
Grand total	39,581	2,885,198	3.6	32,305	2,201,678	3.4

PRODUCTION

The sales of natural graphite by producers in the United States fell from 4,971 short tons in 1924 to 4,665 tons in 1925, a decrease of 306 tons, or 6 per cent. The quantity of amorphous graphite, which in 1925 constituted 76 per cent of the total output, decreased 535 tons, or 13 per cent, compared with 1924. The output of crystalline graphite increased 456,925 pounds, or 25 per cent, compared with 1924. The total value of the amorphous graphite increased slightly—3 per cent—and the value of the crystalline graphite increased $7,744, or 16 per cent, compared with 1924. The production of amorphous graphite was reported from Michigan, Nevada, and Rhode Island, and crystalline graphite from Alabama, Montana, and Texas. Rhode Island was the largest producer of amorphous graphite and Texas the largest producer of crystalline graphite.

Natural graphite sold by producers in the United States, 1916–1925

Year	Number of operators reporting sales	Amorphous		Crystalline		Total value
		Short tons	Value	Pounds	Value	
1916	23	2,622	$20,723	10,931,989	$914,748	$935,471
1917	33	8,301	73,481	10,584,080	1,094,398	1,167,879
1918	42	6,560	69,455	12,861,839	1,454,799	1,524,254
1919	20	3,379	47,716	8,086,191	731,141	778,857
1920	17	4,694	49,758	9,632,360	576,444	626,202
1921	8	1,842	20,860	1,189,523	75,664	96,524
1922	7	2,200	(1)	1,849,766	85,242	(1)
1923	7	4,056	39,560	3,964,900	151,434	190,994
1924	5	4,071	38,533	1,800,325	48,977	87,510
1925	6	3,536	39,640	2,257,250	56,721	96,361

[1] Bureau of Mines not at liberty to publish value.

MANUFACTURED GRAPHITE

Graphite is manufactured by the Acheson Graphite Co., at Niagara Falls, N. Y. The figures given below are published by permission of this company.

Graphite manufactured by the Acheson Graphite Co., 1916–1925, in pounds

1916	8, 397, 281	1921	5, 888, 000
1917	10, 474, 649	1922	13, 031, 926
1918	9, 182, 272	1923	26, 761, 015
1919	8, 163, 177	1924	10, 986, 192
1920	7, 399, 749	1925	12, 135, 655

PRICES

In 1925 the average value of domestic crystalline graphite at the mine ranged from about 2½ to 10 cents a pound, compared with 2 to 3 cents in 1924 and 3 to 6.4 cents in 1923.

The following table is based on information supplied prior to 1920 by importers; since then the figures have been furnished by Charles Pettinos, of New York.

Average prices of Ceylon graphite c. i. f. New York, 1916–1925, in cents per pound

Year	Lump		Chip		Dust		Remarks
	First grade	Second grade	First grade	Second grade	First grade	Second grade	
1916	20 –28	14 –21	13½–20	11½–17	9½–12	9½–10	Low first half; high second half.
1917	28 –32	21 –23	20 –23	17 –19	11 –13	10 –12	High level maintained throughout the year.
1918	15¼–28½	14 –22	12½–21½	11 –18½	10½–12	9 –10	High first half; low second half.
1919	14 –15¼	12 –13	10 –11	8 – 9	6¾– 7½	5 – 6	Low throughout the year.
1920	9 –14	7 –11	7 –10	5½– 7½	5 – 7	3½– 5	High first half; low second half.
1921	5½– 6	4½– 5	4½– 5	3½– 4	3¼– 3¾	2 – 2½	Low throughout the year.
1922	5 – 6	4 – 4½	3¾– 4¼	3¼– 3¾	3 – 3½	2 – 2½	Do.
1923	5 – 6	4 – 4½	3¾– 4¼	3¼– 3¾	3 – 3½	2 – 2½	Do.
1924	5½– 7	4½– 6	4 – 6	3½– 5	3¼– 4½	2 – 3	Low first three-quarters; high last quarter.
1925	7½– 9½	6½– 8½	6½– 7½	5½– 6½	3½– 5½	3 – 4½	High throughout the year.

IMPORTS AND EXPORTS

The reports of the Bureau of Foreign and Domestic Commerce on imports show only the country from which the graphite is shipped, and that is not always the country of origin. For instance, the graphite entered in the table as imported from France probably originated in Madagascar, and that imported from Great Britain should probably be credited to Ceylon and possibly in part to Madagascar. The shipments from Japan probably consisted of graphite from Chosen.

In 1925 the imports of graphite for consumption increased 1,393 short tons, or nearly 9 per cent, and $426,899, or 107 per cent, compared with 1924. Amorphous graphite constitutes the larger tonnage of imports, as it does with domestic production, and during the last three years has been 59 per cent of the total graphite imported. In 1925 two-thirds of the amorphous graphite imported came from Mexico. The value of the crystalline graphite imported far exceeds the value of the amorphous and has comprised 77 per cent of the total value during the last three years. This is at least partly accounted for by the fact that the amorphous graphite from Mexico is imported crude.

Graphite imported for consumption in the United States, 1916–1925, by kinds

Year	Amorphous		Crystalline chip or dust		Crystalline flake		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1916	(1)	(1)	(1)	(1)	(1)	(1)	42,930	$7,279,883
1917							42,577	8,961,988
1918							19,498	3,092,475
1919							26,626	2,978,096
1920							21,095	1,711,312
1921							8,183	452,076
1922							12,488	473,046
1923	11,252	$149,831	7,243	$426,417	939	$37,871	19,434	614,119
1924	10,936	113,751	3,998	197,867	1,441	87,893	16,375	399,511
1925 [2]	9,210	143,750	5,904	389,242	2,654	293,418	17,768	826,410

[1] Not separately classified prior to 1923.
[2] Imports of graphite crucibles were not separately classified until 1925, when 3,100 crucibles, valued at $548, were imported. Weight not recorded.

Graphite imported (general imports) into the United States, 1920–1925

Country	1920		1921		1922	
	Short tons	Value	Short tons	Value	Short tons	Value
Austria	58	$1,195				
Canada	2,170	157,015	687	$48,035	533	$17,392
Ceylon					7,114	324,826
China	2	114	1	95		
Chosen			15	203		
Colombia			9	676		
France	2,243	167,580	1,078	67,506	1,305	52,275
French Indo-China			(1)	3		
Germany	30	2,502			6	425
Hongkong	11	601	(1)	4		
India:						
British	156	36,547	(1)	22	102	6,852
Other British East	7,694	850,329	2,259	194,177		
Italy	137	5,072	47	1,019	35	1,045
Japan	810	29,936	632	14,942	1,171	29,819
Madagascar	2,467	118,803				
Mexico	3,659	131,832	3,404	120,153	2,196	40,954
Netherlands					(1)	4
Russia in Asia	304	19,370				
United Kingdom:						
England	1,354	190,414	51	5,241	144	7,369
Scotland	(1)	2				
	21,095	1,711,312	8,183	452,076	12,606	480,961

Country	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
Aden	111	$1,489				
Austria	59	1,364	5	$180		
Canada	893	37,384	1,137	58,628	2,268	$123,823
Ceylon	7,244	392,350	3,632	171,804	5,616	365,371
China			253	3,905	88	1,502
Chosen	1,705	24,262	251	2,768	439	5,330
Denmark	1	50				
France	843	32,176	851	57,009	2,052	230,056
Germany	4	389	2	282	25	3,256
Greenland	67	600				
India (British)	298	23,059	171	8,450	5	150
Italy	474	7,487	155	3,204	575	16,688
Japan	2,106	34,912	479	8,362	191	9,983
Madagascar	183	5,146	429	11,145	168	10,466
Mexico	5,765	41,339	8,984	70,380	6,159	39,119
Siam	56	2,929				
Switzerland			17	1,944	13	1,600
United Kingdom:						
England	8	1,400	9	1,450	180	20,738
Scotland						
	19,817	606,336	16,375	399,511	17,779	828,082

[1] Less than 1 ton.

Graphite exported from the United States, 1916–1925

Year	Unmanufactured graphite		Manufactures of graphite	Year	Unmanufactured graphite		Manufactures of graphite
	Short tons	Value			Short tons	Value	
1916	798	$98,118	$1,339,259	1921	921	$95,998	$679,359
1917	2,573	349,563	891,687	1922	569	78,094	[1] 255,019
1918	954	121,555	731,518	1923	908	138,542	[1] 335,778
1919	629	90,185	788,755	1924	1,022	144,108	[1] 250,957
1920	607	112,771	610,261	1925	945	142,122	[1] 337,481

[1] Exclusive of crucibles, figures for which are not available.

The exports of unmanufactured graphite, which were equivalent to 20 per cent of the production, decreased 8 per cent in quantity and 1 per cent in value compared with 1924. The average value per pound at the port of export increased from 7.05 cents in 1924 to 7.52 cents in 1925. The value of manufactures of graphite (exclusive of crucibles) exported increased 34 per cent in 1925 and reached its highest point since 1921. Exports of lead pencils are not included in the table showing the value of manufactures of graphite, nor are exports of crucibles included after 1921. Exports of pencils and pencil leads (including refillable pencils) in 1925 were 10,364,349 dozen, valued at $2,186,772. The official classification for export statistics contains the group "Crucibles, clay and graphite," and exports under this heading for 1925 were 408,249 crucibles, valued at $91,699. The corresponding figures for 1924 were 548,893 crucibles, valued at $96,001.

WORLD'S PRODUCTION

The following table, prepared by L. M. Jones, of the Bureau of Mines, shows, as far as figures are available, the production of graphite throughout the world. The most striking features of this table are the increase in production (exports) of Ceylon and the decrease in production of Mexico in 1925.

World's production of natural graphite, 1921–1925, in metric tons

Country	1921	1922	1923	1924	1925
Africa:					
Kenya Colony	254	(1)	(1)	(1)	(1)
Union of South Africa	43	38	54	50	44
Australia:					
New South Wales	----------	51	----------	----------	(1)
Northern Territory	----------	----------	----------	3	(1)
Austria	13,280	14,034	9,403	9,523	(1)
Canada	850	590	1,010	1,210	2,382
Ceylon [2]	4,419	11,024	10,840	9,806	15,674
Chosen [2]	8,002	19,330	13,576	16,032	15,040
Czechoslovakia	13,522	10,500	9,873	11,935	(1)
France	1,100	----------	190	(1)	(1)
Germany	24,565	32,342	20,856	10,079	(1)
Greenland	2,000	432	60	53	(1)
India (British)	25	20	----------	----------	(1)
Indo-China	----------	----------	----------	2,264	(1)
Italy	5,233	4,546	5,691	7,740	9,100
Japan	900	1,046	801	767	(1)
Madagascar	6,220	6,675	10,768	11,556	(1)
Mexico (amorphous)	2,911	2,054	5,489	8,023	5,839
Spain	2,772	530	----------	----------	(1)
United States:					
Amorphous	1,671	1,996	3,680	3,693	3,208
Crystalline	540	839	1,798	816	1,024

[1] Data not available. [2] Exports.

CARBON BLACK PRODUCED FROM NATURAL GAS[1]

By G. R. Hopkins

For the first time since 1920 the yearly production of carbon black showed a decline, the total for 1925 of 177,417,378 pounds from 63 plants operating in 8 States being a decrease of 9,454,656 pounds, or 5 per cent, from the output in 1924. On the other hand, deliveries to consumers in 1925 were higher than ever before, the total for the year, 175,631,326 pounds, being an increase over 1924 of 36 per cent. This large increase in indicated consumption, despite the decline in production, resulted from a radical change in the situation as regards stocks, which were largely increased in 1924 but remained steady in 1925. Stocks on hand December 31, 1925, amounted to 96,023,448 pounds, an increase over 1924 of less than 400,000 pounds as compared with the increase in 1924 of over 57,000,000 pounds.

Although the industry in 1925 bettered its position in respect to stocks of carbon black, prices did not react correspondingly, but reached a new low level of 5.4 cents as the average per pound at the plant. This compares with 6.2 cents in 1924.

Beginning with 1921, Louisiana has been the leading State in the production of carbon black, its output in 1925 of nearly 130,000,000 pounds comprising 73 per cent of the total for the country. Declines of 28 per cent in both West Virginia and Kentucky were recorded in 1925. These declines resulted in the main from a decreased supply of gas which became more valuable for other purposes. Perhaps the outstanding event of the year with respect to the production of carbon black was the rise to prominence of Texas, which displaced West Virginia as second in rank.

The output of carbon black in Texas in 1925 amounted to 26,219,510 pounds, an increase over 1924 of 90 per cent. This output came from two counties—Stephens, with five plants, and Eastland, with two. The moving of one of the latter from Oklahoma to Texas in 1925 eliminated Oklahoma from the list of producers.

It is estimated that 140,000,000,000 cubic feet of natural gas was burned for carbon black in 1925, and the average recovery per thousand cubic feet was, therefore, 1.3 pounds, an increase over 1924.

Plants show wide differences in the yield of carbon black per thousand feet of gas burned. For 1925 the ratio of extreme yields, both at Louisiana plants, was approximately 1 to 20. In that State the average for all plants was 1.2 pounds. The highest State average, 1.8 pounds, was obtained in Kentucky. The plants in the Rocky

[1] Statistics in this report were compiled by H. Backus, of the Bureau of Mines.

Mountain region were among those showing lower yields, as might be expected in view of the oversupply of gas in many sections of that region.

Although there is a growing tendency in most producing areas to restrict the supply of natural gas for carbon black, improvements in equipment or in operating methods have kept production from falling off materially. This has been particularly noticeable in the Monroe field which supplies all the gas for Louisiana's output. The production of carbon black in the vicinity of this field declined only a little in 1925 despite a decrease in gas supply as a result of natural causes and of State restrictions in the interest of conservation.

The channel process remained by far the most important method of producing carbon black from natural gas. It is noteworthy, however, that whereas the amount of carbon black produced by this process was less in 1925 than in 1924, the production by "other processes" increased in 1925.

Exports of carbon black were not separately recorded by the Bureau of Foreign and Domestic Commerce until 1925, when they amounted to 43,182,635 pounds, which is equivalent to nearly 25 per cent of the total production. These exports were valued at $3,555,769, an average value of 8.2 cents per pound.

Carbon black produced from natural gas in the United States, 1924–25

State	Producers reporting	Number of plants	Pounds	Value at plant		Estimated quantity of natural gas used	Average yield per M cubic feet
				Total	Average		
1924					*Cents*	*M cubic feet*	*Pounds*
Louisiana	31	35	144,601,550	$8,844,609	6.1	127,812,000	1.1
West Virginia	6	18	15,045,448	1,125,733	7.5	9,572,000	1.6
Texas	4	4	13,764,014	882,808	6.4	9,546,000	1.4
Kentucky	6	6	10,135,435	488,533	4.8	6,189,000	1.6
Wyoming	2	2	3,325,587	223,253	6.7	3,395,000	1.0
Montana	1	1					
Oklahoma	1	1					
Pennsylvania	1	1					
Colorado	1	1					
	[1] 46	69	186,872,034	11,564,936	6.2	156,514,000	1.2
1925							
Louisiana	29	34	129,839,907	$6,993,162	5.4	109,380,000	1.2
Texas	5	7	26,219,510	1,317,763	5.0	16,854,000	1.6
West Virginia	8	14	10,847,794	805,612	7.4	7,161,000	1.5
Kentucky	5	4	7,309,378	372,067	5.1	3,981,000	1.8
Wyoming	1	1	3,200,789	150,981	4.7	2,990,000	1.1
Montana	1	1					
Colorado	1	1					
Pennsylvania	1	1					
	[1] 42	63	177,417,378	9,639,585	5.4	140,366,000	1.3

[1] In counting the total number of producers a producer operating in more than one State is counted only once.

Summary of statistics of carbon black made from natural gas in the United States, 1920–1925

	1920	1921	1922	1923	1924	1925
Number of producers reporting	19	23	26	47	46	42
Number of plants	35	41	43	69	69	63
Quantity produced:						
Louisiana—pounds	18, 565, 498	31, 003, 615	41, 966, 856	101, 398, 881	144, 601, 550	129, 839, 907
Texas—do				2, 633, 013	13, 764, 014	26, 219, 510
West Virginia—do	26, 659, 469	25, 073, 000	20, 095, 481	20, 038, 415	15, 045, 448	10, 847, 794
Kentucky—do	6, 096, 925	2, 697, 075	4, 306, 875	10, 058, 887	10, 135, 435	7, 309, 378
Other States—do		992, 625	1, 425, 917	4, 133, 452	3, 325, 587	3, 200, 789
Total—do	51, 321, 892	59, 766, 315	67, 795, 129	138, 262, 648	186, 872, 034	177, 417, 378
Produced by:						
Channel process—do	(1)	(1)	(1)	116, 696, 891	162, 257, 725	143, 701, 153
Other processes [2]—do	(1)	(1)	(1)	21, 565, 757	24, 614, 309	33, 716, 225
Stocks held by producers Dec. 31—pounds	(1)	(1)	2, 434, 547	38, 320, 814	95, 671, 246	96, 023, 448
Losses—do	(1)	(1)	(1)	165, 885	660, 836	1, 433, 850
Sales—do	(1)	(1)	(1)	102, 210, 496	128, 860, 766	175, 631, 326
Value (at plants) of carbon black produced:						
Total—dollars	4, 032, 286	5, 445, 878	5, 819, 618	11, 692, 066	11, 564, 936	9, 639, 585
Average per pound—cents	7. 9	9. 1	8. 6	8. 5	6. 2	5. 4
Estimated quantity of natural gas used—M cubic feet	40, 599, 000	50, 565, 000	53, 629, 000	109, 096, 000	156, 514, 000	140, 366, 000
Average yield per M cubic feet—pounds	1. 3	1. 2	1. 3	1. 3	1. 2	1. 3

[1] Not reported.
[2] Including chain, disk, plate, ring, roller, "special," and thermatomic.

ASBESTOS

By Blanche H. Stoddard

INTRODUCTION

The term "asbestos" is commercially applied to varieties of minerals that can be easily separated into flexible fibers. The properties that make asbestos valuable are fibrous structure, toughness and flexibility of the fibers, incombustibility, slow conduction of heat, high electrical resistance, and practical insolubility in ordinary acids. In the United States two minerals are mined and sold under the name of asbestos; one is an amphibole known as anthophyllite and the other is a variety of serpentine known as chrysotile. These two minerals are similar in many of their physical properties and have approximately the same heat-resisting qualities, but chrysotile, in addition to being a poor conductor of heat and electricity, is superior in tensile strength. Its fibers are tougher and more elastic, thereby rendering it desirable for many purposes for which anthophyllite is not suitable. Toughness and relative infusibility are the qualities upon which the commercial value of asbestos chiefly depends. Chrysotile asbestos is more easily decomposed by strong acids than anthophyllite, and for chemical filters anthophyllite is preferable.

The United States is the largest manufacturer and consumer of asbestos products in the world, but the asbestos used comes almost wholly from Canada. In 1925 producers in the United States sold 1,258 short tons of asbestos, and imports amounted to 230,520 short tons, of which 225,938 tons came from Canada. Thus it will be seen that the quantity mined in this country is insignificant.

The Canadian material is wholly chrysotile asbestos, whereas that produced in the United States is both chrysotile and anthophyllite; in 1925 the greater proportion was anthophyllite.

General conditions in the market for the year 1925 were only fairly satisfactory. Several factors acted as a restraint upon the trade, notably the failure of consummation of the Canadian merger of asbestos mines. Such a merger, it was thought, would improve the industry along many lines, especially in regard to stabilizing prices, effecting better grading of asbestos, establishing more satisfactory labor relations, and other improvements. At the present time (September, 1926) this merger has been in operation for several months, and already prices have shown a decided tendency to advance and the market has become firmer. However, the permanent effect can not be evaluated until the merger has been in operation for a longer period.

ASBESTOS SOLD

The total quantity of asbestos sold by producers in the United States in 1925 was 1,258 short tons, valued at $51,700. These figures comprise 93 tons of chrysotile asbestos, valued at $40,750, mined in Arizona and California, and 1,165 tons of amphibole asbestos, valued at $10,950, mined in Georgia, Idaho, and Maryland.

The sales of chrysotile asbestos decreased 46 per cent in quantity and increased 20 per cent in value compared with 1924, and the sales of amphibole asbestos were about nine times as large in quantity as in 1924 and their value increased 28 per cent. The average value of chrysotile asbestos was $438 a short ton, and the average value of amphibole asbestos was $9 a ton. There was notable activity in the anthophyllite field of Georgia, which is the chief cause of the increased sales of domestic asbestos.

Asbestos sold by producers in the United States, 1916–1925, by varieties

Year	Chrysotile		Amphibole		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	808	$167,683	830	$13,311	1,638	$180,994
1917	1,391	279,270	567	11,744	1,958	291,014
1918	392	101,059	606	17,628	998	118,687
1919	502	229,265	659	19,000	1,161	248,265
1920	1,245	661,907	403	16,324	1,648	678,231
1921	438	313,268	393	23,700	831	336,968
1922	25	3,320	42	6,800	67	10,120
1923	69	4,433	158	5,193	227	9,626
1924	173	33,941	127	8,585	300	42,526
1925	93	40,750	1,165	10,950	1,258	51,700

LIST OF PRODUCERS MAKING SALES

Below is a list of producers who sold asbestos in the United States in 1925:

Producers who sold asbestos in the United States in 1925

Name	Address	Location of property
L. M. Arnold	Statham, Ga	1¼ miles northeast from Statham, Ga.
Asbestos Mining & Manufacturing Co.	Hollywood, Ga	½ mile from Hollywood, Ga.
Panhandle Asbestos Co	Kamiah, Idaho	14 miles southeast from Kamiah, Idaho.
Powhatan Mining Corporation.	216 East Lexington Street, Baltimore, Md.	1 mile northwest from Pylesville, Md.
Regal Asbestos Mines (Inc.)	220 Broadway, New York, N. Y.	Gila County, Ariz.; nearest post office, Rice, Ariz.
Riga Asbestos Mining Co	1019–1020 Detweiler Building, Los Angeles, Calif.	On Cherry Creek, in Florine mining district, Sierra Ancha Mountains, Gila County, Ariz.
Webb & Mingus	Fox Hotel Building, Coalinga, Calif.	25 miles northwest from Coalinga, Fresno County, Calif.

REVIEW BY STATES

Arizona.—Asbestos mining in Arizona was much less active in 1925. Only two operators, the Regal Asbestos Mines (Inc.) (E. Schaaf-Regelman) and the Riga Asbestos Mining Co., reported production, as compared with five in 1924. Arizona produces a high-grade

chrysotile asbestos that is suitable for spinning, and is used extensively in making very fine yarns for electrical purposes. Inaccessibility of the deposits, cost of mining, difficulty of getting the product to the market, and competition of Canadian asbestos, which controls the domestic market, are factors that have severely handicapped the development of the Arizona deposits. Considerable interest and activity, however, are evidenced by the work being done by the producers mentioned above. The work includes the driving of new tunnels and crosscuts and the purchase of fiberizing machinery and screens.

California.—The sales of asbestos in California in 1925 were made by Webb & Mingus from stock which was mined in 1918 and 1919 from the Los Gatos mine in Fresno County. The asbestos from this mine is chiefly of milling length, but some "crude" could probably be produced. Operations at the property of the Drifted Snow Asbestos Co., in Sierra County, were temporarily suspended, but the owner intends to renew development later. The Sierra Asbestos Co., which owns property near Washington, in Nevada County, and has been the chief producer in the State, did not operate in 1925, but continued assessment work. The San Benito Asbestos Co. (otherwise known as the California Asbestos Mining Co.), which was the only producer in 1924, produced several tons in 1925 but sold no fiber. The Morgan Mining & Maufacturing Co., whose property is in Placer County, did assessment work. The Pacific Asbestos Corporation, whose property is near Copperopolis, in Calaveras County, was idle throughout the year. Harris & Barrett reported new development at their property in Monterey County, near Jolon, in the way of open cuts.

Georgia.—Much activity was manifested in the anthophyllite field of Georgia, whose output increased many times over that of 1924. The Asbestos Mining & Manufacturing Co., Hollywood, Ga., which acquired the property of the American Mineral Grinding Co. in 1923 and made its initial shipment of asbestos in 1924, continued experiments on the separation of asbestos fiber from associated grit and sand. It reported that additional fiberizing machinery has been installed and that new development consists of quarry openings, shafts, and tunnels. Improved facilities are now expected to give a daily production, and the product is being placed on the market for use in the manufacture of plaster, stucco, and flooring. In Barrow County L. M. Arnold, near Statham, reported a greatly increased production compared with 1924. The product is all used for chemical filters. There were no other producers of asbestos in this State in 1925.

Idaho.—Shipments of amphibole asbestos were made by the Panhandle Asbestos Co. from Idaho County, 14 miles southeast of Kamiah, the only operator in this State.

Maryland.—The Powhatan Mining Corporation operated the Jenkins asbestos mine in Harford County, near Pylesville, which produces a high-grade slip-fiber anthophyllite that is used for making chemical filters.

Montana.—Although no output of asbestos was reported from Montana, the Badger-Montana Mining Co., whose property is in Granite County, near Southern Cross, reported preparations for pro-

duction. The Idaho-Montana Asbestos Co. property in Madison County, nearest post office Cliff Lake, did assessment work only.

Oregon.—New development work on the property in Baker County, near Hereford, of which L. B. Larson, Telocaset, is part owner, consisted of a shaft and several small cuts. No shipments were made.

Other States.—No production of asbestos and no activity of importance were reported from Vermont, Virginia, Washington, or Wyoming.

PRICES

In 1925 prices of Canadian chrysotile asbestos a short ton (f. o. b. Quebec), which control domestic prices, were as follows:

Monthly prices per short ton of Canadian chrysotile asbestos, f. o. b. Quebec, in 1925 [1]

	January	February	March	April	May	June
Crude No. 1	$325–$400	$325–$400	$350–$425	$350–$450	$350–$450	$375–$450
Crude No. 2	175– 215	200– 250	200– 275	250– 300	250– 300	225– 300
Spinning fibers	90– 125	100– 150	100– 175	115– 200	115– 200	100– 200
Magnesia and compressed sheet fibers	65– 90	65– 100	65– 100	65– 115	65– 115	65– 115
Shingle stock	45– 55	45– 55	45– 55	50– 70	50– 70	50– 70
Paper stock	35– 40	35– 40	35– 40	35– 40	35– 40	35– 40
Paper fillers						
Cement stock	15– 25	15– 25	15– 25	15– 25	15– 25	15– 25
Floats	9– 12	9– 12	9– 12	9– 12	9– 12	9– 12
Short fibers						

	July	August	September	October	November	December
Crude No. 1	$450	$450	$400–$450	$400–$450	$450	$475
Crude No. 2	250– 275	250– 275	250– 300	250– 300	275	300– 275
Spinning fibers	110– 200	110– 200	125– 200	110– 175	175	175– 200
Magnesia and compressed sheet fibers	65– 115	65– 115	75– 115	75– 110	125	125
Shingle stock	50– 75	50– 75	50– 75	50– 75	60	70
Paper stock	35– 40	35– 40	35– 40	35– 40	40	40– 45
Paper fillers	20		20	20– 30		
Cement stock	8– 12	8– 12	8– 12	8– 12	25	25
Floats	9– 12	9– 12	8– 12	8– 12		
Short fibers					12	12– 15

[1] Engineering and Mining Journal-Press.

Prices of crude No. 1 asbestos increased steadily from the beginning of 1925 through December. Crude No. 2 stood higher at the end of the year than at the beginning, and spinning fibers and magnesia and compressed sheet fibers took great leaps forward. It will be observed that the figures for 1925 show considerable variation in prices throughout the year. The firm condition of market prices in 1926 is perhaps one of the results of the merger of the Canadian asbestos mines and was among the predictions made by many in the asbestos business before the merger went into effect. Market prices are now controlled by the new Canadian company, the Asbestos Corporation (Ltd.).

IMPORTS AND EXPORTS[1]

Asbestos (unmanufactured) imported into and exported from the United States, 1916–1925

Year	Imports for consumption		Exports	
	Short tons	Value	Short tons	Value
1916	116,162	$3,303,470	[1] 312	[1] $6,133
1917	134,088	4,521,172	708	116,580
1918	137,700	6,337,608	697	51,053
1919	135,270	7,369,685	1,119	157,416
1920	167,558	9,120,253	615	141,071
1921	72,463	2,948,302	520	101,600
1922	149,427	5,144,700	376	49,939
1923	212,420	7,445,143	680	48,525
1924	183,250	5,602,945	1,270	93,163
1925	230,520	7,134,302	1,109	70,846

Figures cover July to December. Not separately classified prior to July, 1916.

Asbestos (unmanufactured) imported into the United States, 1924–25, by countries

Country	1924		1925	
	Short tons	Value	Short tons	Value
Africa:				
British—				
South	1,040	$100,194	421	$37,888
West			185	12,462
Portuguese—				
East	1,049	181,549	3,114	574,448
Other	537	82,439	65	11,705
Belgium	6	132		
Canada	180,051	5,156,901	225,938	6,355,339
Germany	56	5,329	191	35,531
Greece	90	8,720		
India (British)			1	25
Italy	2	367	(1)	88
Japan			(1)	3
Netherlands	2	92		
Spain	(1)	21		
United Kingdom	417	67,201	605	106,713
	183,250	5,602,945	230,520	7,134,302

[1] Less than 1 ton.

In the foregoing table the countries given are merely the countries from which asbestos was last shipped as shown by the invoices or manifests from which the records of imports were compiled. It is probable that British South Africa (Rhodesia and the Union of South Africa) was the actual source of all imports except those credited to Canada and Italy.

The exports of manufactured asbestos in 1924 and 1925 were as follows:

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Manufactured asbestos products exported from the United States, 1924–25, by grades

Grade	1924		1925	
	Quantity	Value	Quantity	Value
Paper, millboard, and roll board.....short tons..	1,086	$124,228	1,080	$119,311
Pipe covering and cement.....do....	2,424	288,266	2,277	280,082
Textile yarn and packing.....do....	599	788,361	685	803,037
Magnesia pipe and boiler covering.....do....	1,560	243,579	2,632	316,978
Asbestos roofing .....squares..	48,968	297,900	79,170	521,766
Other manufactures, except roofing.....short tons..	1,364	787,461	1,089	342,151

USES

Asbestos is one of the most important fireproofing materials known, and it is largely from the best chrysotile that heat and fire resistant textile products are made. Asbestos yarn is spun and woven into incombustible cloth, which is made into curtains and scenery for theaters and other amusement places. Asbestos cloth covered with rubber cement is made into gaskets—a use that consumes a considerable part of the production of crude asbestos. The use of asbestos for brake linings, made of wire and strands of asbestos yarn, for automobiles is greatly increasing. The highest grades of crude asbestos are used for these purposes. Asbestos cloth is made into linings of various kinds, blankets, mattresses for insulation, fireproof suits used by firemen and others; into aprons, gloves, mittens, leggings, and helmets, braided and woven tapes, woven sheet packing, wick and rope, clutch facings, and listings; is used for filtering purposes, in laundries on mangles, and is employed in many other ways.

In respect to quantity consumed the chief use is probably in the manufacture of paper goods for building purposes, millboard, and asbestos shingles. Short-length fiber, whose production far exceeds that of "crude" asbestos, is used for these purposes. Asbestos paper and millboard are used for heat and electric insulation in various ways. Asbestos sheeting paper is used between floors on account of its fire-resisting qualities; as a lining for stoves, heaters, filing cabinets, soldiers' helmets, mufflers of automobiles, drum controllers in sulphite mills, and automobile radiator covers; for filtration purposes; in the manufacture of tubes in the electrical industry, and of papers used for chemical purposes, and in many other ways. Millboard is used for making fireproof wall board, as a joint packing for steam pipes, etc., as a lining for safes, stoves, and heaters, electric switch boxes, garages, washers, hoods of automobiles, and ovens. The use of asbestos shingles, composed of asbestos fiber and Portland cement, is increasing, as is the demand for asbestos cement materials, especially roofing tile. The use of asbestos in electric arc and oxyacetylene welding has made rapid advances and is common in repair shops of industrial plants.

All the uses of asbestos can not be given here. Uses other than those mentioned are as an ingredient in fireproof paints, for making asbestos washers, for covering hose, and in the manufacture of gas burners and of boots and shoes.

WORLD'S PRODUCTION[1]

World's production of asbestos, 1921–1925, in metric tons

Country	1921	1922	1923	1924	1925
Africa:					
Rhodesia, Southern	17,716	12,926	18,474	23,715	31,161
Union of South Africa	4,646	3,981	7,614	6,569	9,224
Australia:					
New South Wales	960	570	207	----------	----------
South Australia	2	----------	7	4	----------
Western Australia	239	184	117	75	51
Canada[2]	61,083	109,128	164,014	150,768	216,907
China[3]	169	197	[4] 128	(6)	(6)
Cyprus[3]	911	2,322	2,186	4,442	3,255
Finland	750	785	(5)	(5)	1,347
France	500	610	664	(5)	(5)
India	321	246	251	127	(5)
Italy	420	540	1,538	2,160	2,105
Japan	(5)	933	826	(5)	(5)
New Zealand	(6)	----------	----------	----------	----------
Russia	2,604	3,215	7,153	[7] 8,454	[7] 12,329
Spain	19	5	----------	----------	----------
United States	754	61	206	272	1,141

[1] Figures for world's production compiled by L. M. Jones, of the Bureau of Mines.
[2] Exclusive of by-products.
[3] Exports.
[4] A production of 7,068 metric tons is reported for China in 1923. (Imp. Min. Res. Bur., London.)
[5] Data not available.
[6] Less than half a ton.
[7] Data relate to operating year ended Sept. 30.

Asbestos shipped from mines in British South Africa, 1913–1925, in metric tons

Year	Southern Rhodesia	Transvaal	Cape Colony	Natal
1913	263	----------	851	22
1914	442	27	1,052	----------
1915	1,823	50	1,890	----------
1916	5,586	369	3,836	19
1917	8,674	2,897	2,721	25
1918	7,778	844	2,485	4
1919	8,889	572	2,906	89
1920	17,076	3,212	3,199	41
1921	17,716	1,445	3,145	56
1922	12,926	1,263	2,713	5
1923	18,474	3,698	3,916	----------
1924	23,715	3,846	2,723	----------
1925	31,161	6,920	2,304	----------

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SLATE

By A. T. Coons

GENERAL CONDITIONS

Slate sold by producers in the United States in 1925 was valued at $12,575,326, an increase of 7 per cent over the value for 1924. The quantity of slate sold, however, which was approximately 724,600 short tons in 1925, represented a slight decrease—less than 1 per cent.

In 1925 as in 1924, strikes in some of the quarries in the Pennsylvania district curtailed the output of roofing slate and all classes of mill stock. A strike in the New York-Vermont district in 1925 chiefly affected the output of roofing slate. Sales of roofing slate, which decreased more than 7 per cent in quantity in 1924, as compared with 1923, increased 5 per cent in 1925 over 1924. The value in 1925 increased 10 per cent. The average value per square in 1924 was $9.86; in 1925, $10.28.

Sales of mill stock in 1925 increased 11 per cent in quantity over 1924. The increase was in the slate sold for blackboards and bulletin boards and for school slates, sales of electrical slate, structural and sanitary slate, and vaults and covers decreasing and sales of slate for use as billiard-table tops being virtually the same as in 1924.

Sales of crushed slate in the form of granules and slate flour decreased 3 per cent in quantity in 1925. The producing companies reported good demand for slate flour but less demand for granules than in 1924. The average value increased from $6.20 a short ton in 1924 to $6.45 in 1925. Other stone, chiefly a "greenstone" which is an altered diabase, crushed into granules and sold in 1925 amounted to 72,560 short tons, valued at $596,217, as shown in the chapter on stone. The number of quarry companies reporting operation in 1925 was 118, or 5 less than in 1924. In New York and Vermont many small quarries are intermittently worked on a small scale for roofing slate. The product of these quarries is generally sold with that of some of the larger quarries, and much of it consists of "freak" or odd-colored slate of unusual size or thickness for use in special work.

As slate from many of the small producers is sold by the larger producing companies, the possibility of duplication of returns must be considered in the compilation of operators' reports. In the compilation of this report special care has been taken to avoid duplication.

PRODUCTION

The following tables show sales of slate, by uses, from 1916 to 1925. In approximating the tonnage for the different slate products given in the second table a specific gravity of 2.75 has been used as the basis of calculation, and thicknesses ranging from three-sixteenths inch to 2 inches corresponding to the averages for the several products. The total quantity and value given for each use are the totals of the reports of the quarrymen (not the selling agents), and the value is that f. o. b. quarry or nearest point of shipment. Some of the mill stock may ultimately be used for purposes other than those reported by the quarrymen.

Slate sold by producers in the United States, 1916–1925, by uses

Year	Roofing slate		Mill stock		Other uses [2] (value)[1]	Total value[1]
	Squares (100 square feet)	Value [1]	Square feet	Value [1]		
1916	835, 873	$3, 408, 934	11, 258, 000	$1, 623, 323	$306, 580	$5, 338, 837
1917	703, 667	3, 411, 740	10, 663, 000	1, 799, 917	538, 309	5, 749, 966
1918	379, 817	2, 219, 131	7, 204, 000	1, 853, 603	768, 386	4, 841, 120
1919	454, 337	3, 085, 957	7, 466, 000	1, 782, 793	1, 161, 898	6, 030, 648
1920	396, 230	3, 524, 658	9, 910, 000	3, 147, 281	2, 054, 503	8, 726, 442
1921	348, 085	3, 197, 745	8, 970, 000	2, 719, 723	1, 404, 538	7, 322, 006
1922	479, 243	4, 069, 761	9, 276, 800	2, 899, 195	2, 207, 828	9, 176, 784
1923	507, 587	4, 582, 535	11, 109, 480	4, 159, 644	3, 334, 445	12, 076, 624
1924	469, 393	4, 626, 614	10, 009, 180	3, 922, 366	3, 227, 036	11, 776, 016
1925	494, 530	5, 084, 945	11, 077, 860	4, 231, 477	3, 258, 904	12, 575, 326

[1] F. o. b. at point of shipment.

[2] Chiefly slate granules.

Roofing slate, mill stock,[1] and slate granules (including slate "flour") sold by producers in the United States, 1924–25, by uses

Use	1924		1925	
	Quantity	Value [2]	Quantity	Value [2]
Roofing—squares	469, 393	$4, 626, 614	494, 530	$5, 084, 945
Approximate equivalent in short tons	158, 420		166, 000	
Electrical—square feet	1, 801, 450	1, 518, 092	1, 655, 810	1, 376, 948
Approximate equivalent in short tons	12, 900		11, 900	
Structural and sanitary—square feet	2, 346, 050	951, 964	2, 332, 700	862, 019
Approximate equivalent in short tons	16, 640		16, 700	
Grave vaults and covers—square feet	566, 160	142, 167	523, 850	125, 582
Approximate equivalent in short tons	8, 100		7, 500	
Blackboards and bulletin boards—square feet	4, 069, 670	1, 151, 767	5, 184, 060	1, 690, 612
Approximate equivalent in short tons	10, 930		13, 900	
Billiard-table tops—square feet	341, 200	131, 028	341, 440	140, 498
Approximate equivalent in short tons	2, 400		2, 500	
School slates—pieces	1, 710, 240	27, 348	1, 944, 320	35, 818
Approximate equivalent in square feet	884, 650		1, 040, 000	
Approximate equivalent in short tons	1, 200		1, 400	
Granules—short tons	512, 810	3, 178, 454	497, 700	3, 210, 904
Other [3]—short tons (estimated)	4, 300	48, 582	7, 000	48, 000
Total (quantities approximate, in short tons)	727, 700	11, 776, 016	724, 600	12, 575, 326

[1] Mill stock sold, including school slates, was as follows: 1924, 10,009,180 square feet, valued at $3,922,366; 1925, 11,077,860 square feet, valued at $4,231,477.

[2] F. o. b. at point of shipment.

[3] Includes slate sold for flagging (187,730 square feet, valued at $47,437, in 1924, and 280,970 square feet, valued at $39,439, in 1925), tombstones, waste slate, and other uses not specified.

Slate sold by producers in the United States in 1925, by States and uses

State	Operators	Roofing		Mill stock		Other uses (value)[1]	Total value
		Squares (100 square feet)	Value	Square feet	Value		
Georgia	1					(2)	(2)
Maine	3	(2)	(2)	(2)	(2)	(2)	$604,062
Maryland	3	(2)	(2)	(2)	(2)	(2)	210,148
New York	17	7,650	$134,790			$716,925	851,715
Pennsylvania	47	287,120	2,316,856	9,685,170	$3,074,438	493,885	5,885,179
Tennessee	1					(2)	(2)
Utah	1					(2)	(2)
Vermont	40	154,400	2,115,942	850,070	641,398	1,205,685	3,963,025
Virginia	5	33,800	377,082			(2)	[3] 377,082
Undistributed		[4] 11,560	[4] 140,275	542,620	515,641	[4] 842,409	[4, 5] 684,115
	118	494,530	5,084,945	11,077,860	4,231,477	3,258,904	12,575,326

[1] For details see table of general sales on p. 66, and table on pp. 73 and 74 for Pennsylvania.
[2] Included under "Undistributed."
[3] Exclusive of value of granules, etc., which is included under "Undistributed."
[4] Includes output of States entered as "(2)" above.
[5] Includes also value of granules, etc., for Virginia.

IMPORTS AND EXPORTS[1]

Value of slate imported for consumption in the United States, 1916–1925

1916	$2,200	1921	$2,923
1917	1,024	1922	2,753
1918	321	1923	16,881
1919	691	1924	32,095
1920	4,512	1925	64,570

Slate imported into the United States, 1924–25, by countries

[General imports]

Country	1924		1925	
	Pounds	Value	Pounds	Value
Belgium			174	$15
Canada	930	$1,853	500	1,359
China			190	96
Czechoslovakia			554	9
Denmark			39,683	732
France			63,935	2,044
Germany	97,466	3,849	5,008	386
Hongkong	48	17	211	56
Italy	1,045,003	15,171	1,677,945	35,601
Japan	70	50	46	25
Netherlands			10	12
Norway			25,575	1,833
Portugal	229,522	2,367	735,471	12,652
Sweden	6,393	127	21,450	1,515
United Kingdom	215,735	8,794	239,226	8,206
	1,595,167	32,228	2,809,978	64,541

[1] The figures of imports and exports (except in the last table on p. 68) were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Value of roofing slate exported from the United States, 1916–1925

1916	$27,630	1921	$101,630
1917	27,113	1922	97,811
1918	65,224	1923	78,780
1919	55,164	1924	77,422
1920	122,105	1925	54,130

Roofing slate exported from the United States, 1924–25, by countries

Country	1924		1925	
	Number of squares	Value	Number of squares	Value
Africa (British):				
South			110	$593
West			8	40
Australia	167	$1,567		
Bermuda			122	1,570
Canada	7,207	69,411	3,495	38,328
Chile			140	816
Guatemala	3	55		
Guiana, British	6	36		
Mexico	24	116	72	380
New Zealand	477	4,587	89	1,069
Panama			147	1,635
Siam			25	128
West Indies:				
British—				
Trinidad and Tobago	240	1,439	1,390	8,539
Other	16	79	32	376
Cuba	25	132	155	656
	8,165	77,422	5,785	54,130

The following figures for exports of slate other than roofing were collected by the Bureau of Mines from shippers of the products named:

Slate other than roofing exported from the United States in 1925, by destinations

Destination	Electrical		Billiard tables		School slates		Blackboards		Total value
	Square feet	Value	Square feet	Value	Cases [1]	Value	Square feet	Value	
North America:									
Canada [2]	[3] 13,830	[3] $10,648	11,430	$5,790	2,260	$21,882	149,470	$68,086	$106,406
Central America	670	662	1,120	563	290	2,952			4,177
Mexico	3,620	3,505	7,380	3,687	560	5,800			12,992
West Indies	5,510	5,241	6,670	3,334	1,110	11,293			19,868
South America	6,030	5,840	5,540	2,773	1,050	11,163			19,776
Europe	700	655			1,400	13,870			14,525
Asia	4,640	4,339	40	20	1,940	18,059			22,418
Africa	20	19			1,260	13,092			13,111
Oceania	1,520	1,424			1,180	13,160			14,584
	[3] 36,540	[3] 32,333	32,180	16,167	11,050	111,271	149,470	68,086	227,857

[1] Cases weigh from 130 to 165 pounds each; average is 135 pounds.
[2] There was also shipped to Canada 15,550 short tons of slate granules, valued at $100,300.
[3] Includes a small amount of structural slate.

REVIEW BY DISTRICTS

The active slate-producing districts of the United States are the Monson district of Maine; the New York-Vermont district, including Washington County, N. Y., and Rutland County, Vt.; the Lehigh

district, including Lehigh and Northampton Counties, Pa., and Sussex County, N. J.; the Peach Bottom district, including Lancaster and York Counties, Pa., and Harford County, Md.; Berks County, Pa.; and the Buckingham County (Arvonia) and Albemarle County districts of Virginia. These districts produce roofing slate and mill stock; some of them produce also roofing granules and slate flour. Roofing granules and flour are also produced in Georgia, Tennessee, and Utah.

The operators in the different districts in 1925 are given below, as are brief statements on prospective operations in other places.

MAINE DISTRICT

All the slate produced in Maine in 1925 was from Monson, Piscataquis County. The producers were:

The General Slate Co., 148 State Street, Boston, Mass.; roofing.
The Monson Maine Slate Co., 112 Water Street, Boston, Mass.; roofing and mill stock chiefly for electrical purposes.
The Portland Monson Slate Co., 25 Central Wharf, Portland, Me., roofing and mill stock chiefly for electrical purposes.

The demand for roofing slate was good, but the demand for electrical and other mill stock was not as satisfactory as in 1924.

NEW YORK-VERMONT DISTRICT

New York and Vermont produce all of the colored slates used for roofing. Red slate is the chief product of the New York quarries, but they also produce, with those of Vermont, the various green, purple, variegated, mottled, and "freak" slates at present in demand for roofs. The output of the New York quarries is chiefly for roofing slate and granules.

The Vermont quarries produce roofing slate, mill stock, and slate granules. The colors are in a wide variety and combinations of green and purple generally classed as green, unfading green, unfading mottled green and purple, weathering green (sea-green), purple, variegated, and "freak" colors. There are also black and gray varieties. Most of the granules manufactured are green.

Much of the roofing slate in both Vermont and New York is quarried and shaped by owners of small quarries that are worked at irregular intervals. This slate is generally of unusual color and specially sized and is sold through operators of large quarries or through dealers. On account of the variety of colored slates found in the district much of the roofing slate commands a high price. The demand for slate was good in 1925, but a strike of slate makers from May throughout the year, chiefly in the quarries near Pawlet, West Pawlet, and Wells, Vt., somewhat curtailed the output of slate. The strike was still in effect the beginning of 1926, but some of the plants had started work on an open-shop basis.

The following list of operators of quarries in New York and Vermont includes the names of most of the operators of small quarries:

New York:
Granville—
Advance Industrial Supply Co. (address, 111 West Washington Boulevard, Chicago, Ill.); Hulett quarry; granules and flour (red).
Davies & Evans; roofing (heavy "freak").

New York—Continued.
Granville—Continued.
Old English Slate Quarries (address, Glens Falls); roofing (variegated), flagging, tile.
J. B. Preston Co. (address, 345 Madison Avenue, New York City); granules (red).
Red Slate Producing Co. (address, Easton, Pa.); roofing (red).
Hampton—Staso Milling Co. (address, 332 South Michigan Avenue, Chicago, Ill.); granules and flour (red).
Hebron—John J. McDonough (address, West Pawlet, Vt.); roofing (heavy "freak").
Middle Granville—
Ellis & Diplock; roofing ("freak").
Jones & Hopkins (address, Whitehall); roofing.
Kelley & Owens; roofing.
H. C. McDonough & Sons; roofing.
Sheldon Slate Products Co.; roofing, and granules and flour (red).
Thomas Bros.; roofing, flagging.
Middle Granville and North Granville—Amalgamated Slate Quarries Co. (address, Easton, Pa.); roofing.
North Granville—Blue Slate Co. (address, Granville); roofing.
Truthville—Thomas L. Lewis (address, Granville); roofing (gray).
Vermont:
Castleton—
P. F. Hinchey & Co. (address, Hydeville); roofing, electrical.
The John Jones Slate Co.; roofing, electrical, vaults and covers (purple).
Staso Milling Co. (address, 332 South Michigan Avenue, Chicago, Ill.); granules and flour (green).
Castleton, Fair Haven, and Poultney—Fair Haven Marble & Marbleized Slate Co. (address, Fair Haven); Col. Allen, Allen, and Hazard quarries; roofing, structural, electrical, billiard tables, flagstones, etc. (mottled green and purple, green, purple).
Castleton and Poultney—The Penrhyn Slate Co. of Vermont (address, Hydeville); Bomoseen and Alliance quarries; roofing, electrical, vaults and covers (green, purple).
Fair Haven—
S. Allen's Sons; Eureka quarries; roofing (green, purple, variegated).
C. R. Beach; roofing (variegated green and purple).
Clark-Flanagan (Inc.); roofing, electrical (variegated green and purple).
Durick, Keenan & Co. (Inc.); electrical, billiard tables (purple).
General Slate Co. (address, 148 State Street, Boston, Mass.); Sherman quarry; roofing, flagstones (unfading mottled green and purple).
Jones & Parkhurst; roofing, flagstones (unfading green).
Mahar Bros. Slate Co. (Inc.); roofing, electrical, vaults and covers (unfading green, mottled green and purple).
Old English Slate Quarries (address, Glens Falls, N. Y.); roofing, electrical, flagstones, etc. (mottled green and purple). This quarry sold in November, 1925, to Hydeville Slate Works.
Old Homestead Slate Co. (Inc.); roofing (purple).
Pedro Bros. (address, R. D. North Poultney); roofing (unfading green, mottled).
W. H. Pelkey (Inc.); St. Mark quarry; roofing, structural, electrical, vaults and covers, billiard tables (unfading green, mottled green and purple).
Hydeville—Hydeville Slate Works; Bull Head quarries; electrical (purple, purple and variegated).
Pawlet—
Wm. Morris & Son (address, Granville, N. Y.); roofing (sea-green).
Norton Bros. (address, Granville, N. Y.); roofing, flagstones, etc. (sea-green, mottled gray, mottled, purple, unfading green).
O'Brien Brothers Slate Co. (Inc.) (address, Granville, N. Y.); roofing (unfading green, sea-green, mottled, purple).
Ondawa Slate Co. (address, Granville, N. Y.); roofing (unfading green).

Vermont—Continued.
Pawlet—Continued.
Owen W. Owens Sons (Inc.) (address, Granville, N. Y.); roofing (sea-green).
Progressive Slate Co. (address, Granville, N. Y.); roofing (sea-green).
Pawlet, Poultney, and Rupert—Fred C. Sheldon Slate Co. (address, Granville, N. Y.); Eastern, Rice, and Southern quarries; roofing (sea-green, unfading green, mottled purple, red, "freak," black), granules (red).
Poultney—
Amalgamated Slate Quarries Co. (address, Easton, Pa.); roofing.
The Auld & Conger Co. (address, Cleveland, Ohio); roofing (sea-green).
Cambrian Slate Co. (address, Granville, N. Y.); roofing (purple variegated, sea-green).
Donnelly & Pincus; roofing.
William Griffith Slate Co. (Inc.); roofing (green, gray, black, purple).
New York Consolidated Slate Corp.; roofing (unfading green, unfading mottled green and purple).
Poultney and West Pawlet—Rising & Nelson Slate Co. (address West Pawlet); roofing (purple, green, gray, black, mottled).
Wells—
Evergreen Slate Co. (Inc.) (address, Granville, N. Y.); roofing (sea-green, unfading green, unfading mottled green and purple).
Thomas Bros. (address, Granville, N. Y.); roofing.
Williams Bros. (address, Middle Granville, N. Y.); roofing (sea-green).
Hugh George Williams (address, Granville, N. Y.); roofing (sea-green, mottled green and purple).
West Pawlet—
Edwards Bros.; roofing (sea-green).
Hughes & Edwards; roofing.
Jones & Griffiths; roofing.
Jones & Roberts; roofing (sea-green).
Patrick Kehoe; roofing ("freak," black).
Griffith T. Roberts estate; Brownell quarry; roofing (sea-green).

MIDDLE ATLANTIC STATES

NEW JERSEY

The slate quarries near La Fayette and Newton, Sussex County, N. J., were idle during 1925, but according to report they might be reopened in 1926. These quarries for both geologic and geographic reasons are included in the district with the Pennsylvania slates, as is the "Peach Bottom" slate quarried in Maryland.

MARYLAND

Two companies in 1925 operated quarries at Cardiff, Harford County, Md., for the production of roofing slate—the Peach Bottom Slate Co., of Harford County, and the Peerless Slate Co. (address, Century Building, Pittsburgh, Pa.). A small amount of mill stock was also produced. The Staso Milling Co. (address, 332 South Michigan Avenue, Chicago, Ill.) crushed slate for granules and slate flour at Whiteford in the same county.

PENNSYLVANIA

Pennsylvania is the largest producer of slate, exclusive of slate granules, in the United States and also produces a greater variety of slate products than any other State, although Maine and Vermont

both outrank it in output of electrical slate. Slate is quarried in five counties. That from Berks, Lancaster, and York Counties was sold entirely as granules and flour. The product from Berks County is a slaty shale rather than a slate, but is included with the slate because it is crushed to flour and used as a filler like pulverized slate. The slate produced in York County at present is crushed material from the dumps of an abandoned quarry, but at one time the quarries were worked for "Peach Bottom" roofing slate. The product from Lehigh and Northampton Counties is almost entirely roofing slate and mill stock. The slate companies operating in Pennsylvania in 1925, with their chief products, are given below:

Berks County:
Greenawald—J. Wilbur Co. (address, Providence, R. I.); slate flour.
Lenhartsville—Greenwich Manufacturing Co.; slate flour.

The plant of the Atlas Mineral Products Co., of Pennsylvania, near Albany, was destroyed by fire, and according to reports is not to be rebuilt.

Lancaster County: Peach Bottom—Gorsuch Bros. (Inc.); granules (blue black).
Lehigh County:
Slatedale—
Blumont Slate Co. (address, Slatington); electrical, bulletin boards.
Manhattan Slate Co. (address, Slatington); roofing, structural and sanitary, electrical, blackboards, bulletin boards, school slates, radio slates.
Royal Blue Slate Co.; roofing, electrical, blackboards, bulletin boards, school slates.
Thos. H. Shenton; roofing, structural and sanitary, electrical.
Thomas Slate Co.; roofing, electrical, blackboards, bulletin boards, school slates.
Slatington—
Blue Mountain Slate Manufacturing Co.; roofing, electrical, blackboards.
Blue Ridge Quarries (Inc.); roofing, structural and sanitary, blackboards, bulletin boards, school slates.
Cambridge Slate Co.; roofing, structural and sanitary, blackboards.
Slatington Slate Co.; roofing, structural and sanitary, electrical, blackboards, bulletin boards, school slates.
Northampton County:
Bangor—
Bangor Fidelity Slate Co. (Inc.); roofing, structural, electrical, vaults and covers, blackboards, billiard tables.
Bangor Ideal Slate Mining Co.; roofing.
Bangor Quarry Co. (address, 1920 East Seventy-fifth Street, Cleveland, Ohio); roofing, structural.
Bangorvein Slate Co.; roofing, blackboards.
Bangor Washington Slate Co.; roofing.
Columbia Bangor Slate Co.; roofing.
North Bangor Slate Co.; North Bangor and Northampton quarries; roofing, structural, electrical, vaults and covers, blackboards, school slates, billiard tables.
Old Bangor Slate Co. (address, Easton); roofing.
The Slate Products Co. (Inc.); roofing, structural, vaults and covers, blackboards.
Woodley Slate Co. (Inc.); New York quarry; structural, electrical, vaults and covers, blackboards.
Berlinsville—
Amalgamated Slate Quarries Co. (address, Easton); Genuine Washington and Provident quarries; roofing, structural, electrical, vaults and covers, blackboards, school slates.
Commonwealth Slate Co. (address, R. D. Walnutport); roofing, blackboards, school slates.

Northampton County—Continued.
Chapman Quarries—The Chapman Slate Co.; roofing.
Chapman Standard Slate Co.; roofing; quarries idle; sales from stock.
East Bangor—The East Bangor Consolidated Slate Co.; roofing, structural, vaults, billiard tables, waste for paint and asphalt filler.
Edelman—The Hard-Vein Slate Co. (address, Easton); roofing.
Pen Argyl—
The Albion Vein Slate Co.; roofing.
Belmont Slate Co. (address, Bangor); roofing, structural, electrical, vaults and covers, blackboards.
Diamond Slate Co. (Inc.); structural, electrical, vaults and covers, blackboards.
Doney Slate Co.; roofing, structural, electrical, blackboards, billiard tables.
Jackson-Bangor Slate Co.; roofing, structural, blackboards.
Keenan Structural Slate Co. (Inc.); roofing, structural, electrical, vaults and covers, blackboards.
Parsons Bros. Slate Co.; roofing, structural, electrical, vaults and covers, blackboards, billiard tables.
Parsons Manufacturing Co.; granules and flour (blue black).
Stephens-Jackson Co.; Courtney quarry; roofing, structural, electrical, vaults and covers, blackboards, billiard tables.
D. Stoddard & Sons (address, Bangor); structural, vaults and covers, blackboards, billiard tables.
Windgap—
Bolger-Heller Slate Co. (address, Bangor); roofing, structural, electrical, vaults and covers, blackboards.
Colonial Slate Co. (address, Bangor); roofing, structural, electrical, blackboards.
Imperial Slate Blackboard Co. (Inc.); roofing, blackboards.
Phoenix Slate Co.; roofing, structural and sanitary, electrical, blackboards, billiard tables.
M. L. Tinsman & Co. (address, Pen Argyl); roofing, structural, vaults and covers, blackboards.
York County: Delta—Blue Mountain Stone Co. (address, Hagerstown, Md.); granules (blue black).

The sales of slate by producers in Pennsylvania, by counties and uses, in 1925 were as follows:

Slate sold by producers in Pennsylvania in 1925, by counties and uses

County	Operators	Roofing slate		Mill stock			
		Squares (100 square feet)	Value	Structural and sanitary [1]		Electrical	
				Square feet	Value	Square feet	Value
Berks, Lancaster, Northampton,[2] and York	5						
Lehigh	9	20,300	$178,504	78,790	$30,436	346,050	$210,029
Northampton	33	266,820	2,138,352	2,623,970	865,651	142,030	136,484
	48	287,120	2,316,856	2,702,760	896,087	488,080	346,513
Total, 1924	54	249,450	2,020,986	2,710,330	996,460	510,850	366,562

[1] Includes slate for grave covers and vaults. [2] For roofing granules and "flour."

NOTE.—Table continued on next page.

Slate sold by producers in Pennsylvania in 1925, by counties and uses—Con.

County	Mill stock—Continued				Other [3]	Total value
	Blackboards and bulletin boards		School slates			
	Square feet	Value	Square feet	Value		
Berks, Lancaster, Northampton, [1] and York					$491,780	$491,780
Lehigh	745,890	$185,846	1,000,500	$34,564	423	639,802
Northampton	4,337,440	1,503,490	39,500	1,254	[4] 108,366	[4] 4,753,597
Total, 1924	5,083,330	1,689,336	1,040,000	35,818	600,569	5,885,179
	4,064,520	1,149,810	884,650	27,348	596,702	5,157,868

[1] For roofing granules and "flour."
[3] In 1924 includes 288,950 square feet of billiard-table material, valued at $106,674, and 80,340 short tons of granules and "flour," valued at $487,779, and in 1925, 271,000 square feet of billiard-table material, valued at $106,684, and 69,980 short tons of granules and "flour," valued at $491,780.
[4] Exclusive of value of roofing granules and "flour," which is included in first entry above.

SOUTHEASTERN STATES

The active companies in these States in 1925 and their principal products are given below:

Virginia:
- Albemarle County: Esmont—Blue Ridge Slate Corporation (address, Charlottesville; Flint Arrow quarry; roofing, granules (blue black).
- Buckingham County: Arvonia—
  - Arvonia-Buckingham Slate Co. (address, Richmond); roofing.
  - Le Sueur-Richmond Slate Corporation (address, Ore Bank); roofing, flagstones.
  - The Pierce Slate Co. (address, Ore Bank); roofing.
  - The Williams Slate Co.; roofing.

Tennessee: Monroe County: Tellico Plains—The Tennessee Rock Products Co. (address, Hagerstown, Md.); granules (green).

Georgia:
- Bartow County: Fairmount—Richardson Co. (address, Lockland, Ohio); Flexatile quarry; granules; only commercial slate produced in Georgia in 1925.
- Polk County: Rockmart—The Empire State Slate Products Co. reported development of a quarry, but made no output.

OTHER STATES

Arkansas.—Some interest in development work on slate properties was shown during the year, but no sales were reported.

Michigan.—During 1924 the Ford Motor Co. (Detroit) worked a slate quarry at L'Anse and shipped the material quarried to the Dearborn plant of the company. Some of it was used for experimental purposes and some as roofing shingles. The output of this quarry has not been included in the figures for 1924; no shipments were made in 1925.

Utah.—A slate quarry owned by F. W. C. Hathenbruck, near Provo, has been worked at various times for several years, and in 1925 a small amount of slate for granules was shipped from it. The deposit furnishes green and purple slates.

California.—The El Dorado Slate Products Co. and F. A. Losh, both of Placerville, Eldorado County, reported development of their quarries in 1925 with a view to production in 1926.

SHIPMENTS

In 1923, 1924, and 1925 an attempt was made to collect statistics regarding shipments of slate from the quarry districts to the different States. The collection of these statistics was undertaken chiefly at the request of the National Slate Association. The localization of slate deposits in the most thickly populated part of the United States makes transportation to markets in other areas where cities and towns are growing up a matter of considerable importance to the slate trade. Transportation and freight rates have long been a retarding factor in the slate industry, and the better rates that have been obtained have been given as one of the main reasons for the increased activity of the slate trade. The total quantity of slate quarried annually is small compared with that of many other mineral products, and no one company has a large output. To facilitate marketing, the large quarry companies and joint selling agencies act as distributers for many of the quarries and also as buyers for the slate trade. As a result, many quarry operators have no record of the ultimate destination of their slate.

As the statistics collected by the Bureau of Mines are obtained from the quarrymen rather than from the dealers and jobbers, the figures showing the distribution of the sales of slate have not been satisfactory, although some of the largest dealers cooperated with the Bureau of Mines by furnishing statements of the distribution of their sales for the year. Among the large jobbers of slate are the Vendor Slate Co., Easton, Pa., selling the roofing slate of many quarrymen in Pennsylvania, Vermont, and New York; John D. Emack Co., Philadelphia, Pa., distributer of roofing slate and other slate products from the New York, Pennsylvania, and Vermont quarries; the Natural Slate Blackboard Co., Pen Argyl, Pa., distributer of slate blackboards; the American Slate Works and the National School Slate Co., Slatington, Pa., distributers of school slates; and the Structural Slate Co., Pen Argyl, Pa., distributer of structural and sanitary slate, electrical slate, and slate for billiard-table tops. In New York and Vermont the larger producing companies as well as jobbers and dealers act as distributing agents.

The table that follows shows the shipments in 1925 by States of such products as were reported. They range from one-half to virtually all of the total sales reported. The States are grouped to follow as closely as possible the territories covered by the different freight associations. A few estimates are included for companies that did not furnish the information desired, but whose product and market are known by the Bureau of Mines.

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Distribution of slate products reported to the Bureau of Mines in 1925, grouped by general freight districts

District	Structural and sanitary (square feet)	Electrical (square feet)	Vaults and covers (square feet)	Blackboards and bulletin boards (square feet)	Billiard-table tops (square feet)	Granules (short tons)
New England States: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island	402,270	265,000	93,760	479,590	2,680	30,500
Middle Atlantic States: New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, Virginia, and West Virginia	953,050	650,000	332,000	1,380,950	34,940	145,920
South Atlantic States: North Carolina, South Carolina, Georgia, and Florida	19,850	1,910	9,850	157,160	----------	4,980
Northeastern Central States: Ohio, Indiana, Illinois, and Michigan	185,530	211,000	15,110	951,950	72,030	227,590
Southeastern Central States: Kentucky, Tennessee, Mississippi, and Alabama	23,540	7,810	160	113,000	----------	3,850
Northwestern Central States: Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Iowa, Kansas, Missouri, and Colorado	67,450	66,280	9,750	621,820	15,310	7,770
Southwestern Central States: Oklahoma, Arkansas, Texas, and Louisiana	95,250	2,560	1,170	187,500	2,330	19,620
Northern Mountain States: Montana, Idaho, and Wyoming	350	30	----------	15,250	----------	--------
Southern Mountain States: Utah, Nevada, Arizona, and New Mexico	250	180	----------	19,300	----------	--------
Pacific Coast States: Washington, Oregon, and California	3,180	4,820	----------	377,860	----------	2,940
	1,750,720	1,209,590	461,800	4,304,380	127,290	443,170
Exports	(1)	[1] 36,540	----------	149,470	32,180	15,550
Total distribution reported	[1] 1,750,720	[1] 1,246,130	461,800	4,453,850	159,470	458,720
Total sales	2,332,700	1,655,810	523,850	5,184,060	341,440	497,700

[1] Small amount of structural slate included with electrical.

MAGNESIUM AND ITS COMPOUNDS

By J. M. Hill[1]

INTRODUCTION

For many years magnesite, the normal carbonate of magnesium, and dolomite, or high-magnesium limestone, were the only commercial sources of magnesian products in the United States. Other natural compounds are magnesium chloride and magnesium sulphate. The manufactured compounds include the basic (or "technical") carbonate, calcined and dead-burned magnesite, dead-burned dolomite, and precipitated carbonate and sulphate derived from magnesite or dolomite, or from the crude sulphate.

This report includes only the dolomite that is produced for its magnesium content.

The uses to which magnesite has been or may be put, for most of which dolomite is also used, are as follows.[2]

In the manufacture of carbon dioxide and the sulphite process of paper manufacturing, in both of which magnesite has been largely displaced by cheaper dolomite or limestone; for refractory brick, shapes, crucibles, and furnace hearths, for which both dead-burned magnesite and dead-burned dolomite are used; for medicinal and toilet preparations, which are made from magnesite, dolomite, and natural magnesium sulphate; for pipe covering (mixed with asbestos), which in this country is made from dolomite; for oxychloride (Sorel) cement, which is made from a mixture of caustic calcined magnesite and magnesium chloride; as an absorbent in the manufacture of dynamite, an accelerator in the vulcanization of rubber, fused magnesia for insulation at exceedingly high temperatures, and an adulterant of paint—all of which presumably call for calcined magnesite but are relatively unimportant in the consumption of domestic magnesite; and for metallic magnesium, which is made from calcined magnesite and from magnesium chloride.

MAGNESITE

DOMESTIC PRODUCTION

Mines in the United States produced 120,660 short tons of crude magnesite, valued at $1,432,700, in 1925, an increase of 560 tons in

[1] Helen M. Gaylord, of the Bureau of Mines, assisted in the preparation of this report. Figures on imports and exports were compiled from records of the Bureau of Foreign and Domestic Commerce by J. A. Dorsey, of the Bureau of Mines.

[2] These uses are reviewed in detail in U. S. Geol. Survey Bull. 355, 1908. Brief comments on magnesium chloride, sulphate, basic carbonate, metallic magnesium, and their uses appear in the chapter on magnesite in Mineral Resources for 1914, pp. 573–577.

quantity and of 38 per cent in value, as compared with 1924. This value for the total crude magnesite is an estimate determined by arbitrary valuations f. o. b. shipping points; these averaged $13.50 a ton in California and $10 a ton in Washington. Of the total output for 1925, 64,600 tons were produced in California and 56,060 tons in Washington. Most of the production in California was sold as caustic calcined magnesite, and most of that in Washington was sold dead-burned.

Five producers in California in 1925 operated at seven localities in four counties. In Washington one company produced crude magnesite from deposits near Chewelah, in Stevens County.

Producers reported that, at the end of 1925, 3,190 tons of crude magnesite, as compared with 6,000 tons the year before, were in stock on dumps, exclusive of large quantities of fines held at several dumps for eventual calcination.

Domestic magnesite (expressed as equivalent crude) sold or treated in the United States, 1916–1925

Year	California		Washington		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	154,259	$1,388,331	715	$5,362	154,974	$1,393,693
1917	211,663	2,116,630	105,175	783,188	316,838	2,899,818
1918	84,077	761,811	147,528	1,050,790	231,605	1,812,601
1919	50,020	504,973	106,206	743,442	156,226	1,248,415
1920	81,782	1,083,262	221,985	1,664,888	303,767	2,748,150
1921	47,904	510,177			47,904	510,177
1922	[1] 55,790	[1] 571,745	(1)	(1)	55,790	571,745
1923	73,350	938,600	73,900	165,100	147,250	1,103,700
1924	67,240	901,700	52,860	139,600	120,100	1,041,300
1925	64,600	872,100	56,060	560,600	120,660	1,432,700

[1] Washington included with California. Bureau of Mines not at liberty to publish figures.

Magnesite of domestic origin sold, 1922–1925

Year	Crude			Caustic calcined			Dead-burned		
	Short tons	Value		Short tons	Value		Short tons	Value	
		Total	Average		Total	Average		Total	Average
1922	1,300	$13,330	$10.25	21,990	$815,630	$37.00	2,200	$51,260	$23.30
1923	6,020	78,260	13.00	28,470	1,035,740	36.38	34,410	671,000	19.50
1924	1,570	20,410	13.00	26,520	883,120	33.30	29,830	787,560	26.40
1925	2,090	26,290	12.58	23,900	782,700	32.75	29,110	923,960	31.74

CRUDE MAGNESITE

In 1925 the quantity of domestic magnesite sold crude by the producers was 2,090 short tons, part of which was caustic calcined later for use as plaster. The average value was $12.58 a ton. A small quantity of crude magnesite was used by makers of high-grade refractory products and a much smaller quantity of carefully selected magnesite was sold for the manufacture of metallic

magnesium. The largest part of the magnesite sold crude was for the manufacture of magnesium chemicals.

CAUSTIC CALCINED MAGNESITE

The domestic caustic calcined magnesite sold in 1925 amounted to 23,900 short tons, with an average value of $32.75 a ton; all of it came from mines in California. The largest producers of caustic calcined magnesite were C. S. Maltby, the Sierra Magnesite Co., and the California Magnesia Co. (Harker & Hoff).

DEAD-BURNED MAGNESITE

The domestic dead-burned magnesite sold in the United States in 1925 amounted to 29,110 short tons, with an average value of $31.74 a ton. Eighty-seven per cent of the dead-burned output was produced in Washington, but some was produced in San Benito and Tulare Counties, Calif.

MARKET AND PRICES

In 1925 the market for domestic magnesite of all grades was only fair, and producers still insist that east of Chicago they can not compete with foreign magnesite. Caustic calcined magnesite from India and from Greece is still sold cheaper in the Atlantic Coast States than domestic material of equal grade.

Operators reported only small sales of domestic crude magnesite at $10 to $14 a ton, but the average price of the crude magnesite sold in 1925 was $12.58 a ton. Crude magnesite was imported in the eastern markets in 1925 at a declared value of $13.10 a ton.

Domestic caustic calcined magnesite was quoted at $35 a ton lump form and $42.50 a ton ground, f. o. b. plants in California, until late in August, after which "Prime white" was quoted at $40, grade A $40, and grade B $38 a ton, throughout the balance of the year.[3] Producers reported sales of domestic caustic calcined magnesite at prices ranging from $30 to $40 a ton, but the bulk of the output sold at about $32.75 a ton f. o. b. shipping point. Magnesite from Greece was quoted throughout the year at $50 to $51 a ton c. i. f. New York.

Domestic dead-burned magnesite was quoted[3] at $40 to $42 a ton delivered in sacks at Baltimore, Md., or Chester, Pa., and at $29 to $31 a ton in bulk at Chewelah, Wash., until August, when all quotations were $40 a ton eastern seaboard. Producers reported the bulk of sales at $30 to $35 a ton f. o. b. California plants and $32 a ton f. o. b. Washington plants.

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[3] Engineering and Mining Journal-Press: Vols. 119 and 120, 1925.

Average value per short ton of domestic and imported magnesite, 1921–1925

Year	Domestic [1]			Imported [2]		
	Crude	Caustic calcined	Dead-burned	Crude	Calcined, not purified	
					Caustic calcined	Dead-burned
1921	$10.65	$32.00	(3)	$10.11	$36.97	
1922	10.25	37.00	$23.30	13.31	17.54	
1923	13.00	36.38	19.50	8.51	$28.10	$11.46
1924	13.00	33.30	26.40	14.17	23.44	16.32
1925	12.58	32.75	31.74	13.10	24.29	14.54

[1] Value f. o. b. mine shipping point. [2] Declared value. [3] Data insufficient for calculation of average.

Separate figures for imports of caustic calcined and dead-burned magnesite are not available prior to September 22, 1922, but the writer estimates that the average values for dead-burned magnesite imported have been as follows: 1921, $10.77; 1922, $12.92.

The companies in California and Washington named below produced magnesite in 1925, and two individual operators in California made a small output. Most of the producers sell the calcined products, though some crude can possibly be had from any of them.

California: California Magnesia Co. (old Harker & Hoff), Monadnock Building, San Francisco; C. S. Maltby, Humboldt Bank Building, San Francisco; Sierra Magnesite Co., Balfour Building, San Francisco.

Washington: Northwest Magnesite Co. (Finch and other deposits), Crocker Building, San Francisco, Calif.

The market for plastic magnesite was depressed during the summer; that for dead-burned magnesite was slow by reason of large importations, but was somewhat better than in 1924. The freight rate of 50 cents per 100 pounds from western centers to Chicago territory, granted in August, 1925, may be raised, although up to February 10, 1926, no formal announcement of a change had been made. No adjustment of rates east of Chicago was made. Domestic producers requested that the Tariff Commission reopen the question of an increase in import tariff. Up to August, 1926, no date for hearings on this question had been set.

IMPORTS

Magnesite, not purified, imported into the United States, 1921–1925, by countries, in short tons

[General imports]

Country	1921	1922	1923	1924	1925
Africa, British South				(1)	34
Austria	9,496		1,675	156	
Belgium		50	101	54	433
Canada	427	973	427	124	95
Czechoslovakia	213	7,781			100
France				28	
Germany	3,884	20,074	162	206	275
Greece	4,480	1,120	5,510	110	408
India, British	28	3,297	7,576	8,011	9,933

[1] 595 pounds.

Magnesite, not purified, imported into the United States—Continued

Country	1921	1922	1923	1924	1925
Italy	36,121	94,930	65,262	54,619	51,521
Netherlands	2,914	5,379	4,406	5,348	4,752
Norway					23
Poland and Danzig			1		
Rumania			24		
United Kingdom:					
England	8	59	162	548	1,543
Scotland	90	595	729	1,202	
Venezuela	1,120				
	58,781	134,258	86,035	70,406	69,117

Magnesite, not purified, imported into the United States in 1925

[General imports]

Country	Crude		Caustic calcined		Dead-burned and grain (not suitable for manufacture into oxychloride cements)	
	Pounds	Value	Pounds	Value	Pounds	Value
Africa, British South			67,200	$1,012		
Belgium	152,151	$2,109	713,481	11,361		
Canada			177,450	2,746	13,500	$182
Czechoslovakia					200,000	1,781
Germany			551,106	5,934		
Greece	703,450	2,000	112,000	2,018		
India, British			19,865,576	179,760		
Italy	7,871,579	48,211	143,466	913	95,026,355	701,310
Netherlands	52,334	830	9,451,135	151,785		
Norway			46,946	833		
United Kingdom	176,800	4,035	2,909,960	55,824		
	8,956,314	57,185	34,038,320	412,186	95,239,855	703,273

Magnesite imported for consumption in the United States, 1921–1925

Year	Crude		Calcined, not purified	
	Short tons	Value	Short tons	Value
1921	51,993	$525,452	6,788	$250,932
1922	73,331	976,283	72,265	1,267,622
1923	5,182	44,081	72,955	1,022,968
1924	6	85	64,785	1,172,403
1925	487	6,382	68,395	1,160,830

EXPORTS

No exports of magnesite, either crude or calcined, were reported during 1925, but materials made of magnesia (including pipe and boiler coverings) having a weight of 5,264,203 pounds and valued at $316,978 were exported, as compared with 3,120,070 pounds, valued at $243,579, in 1924.

IMPORTED STOCKS

Stocks of imported magnesite in bonded warehouses averaged 13,183 short tons a month during 1925. The largest amount was

13,285 tons during both August and September, and the lowest, 13,111 tons in December.

ANNUAL SUPPLY

The annual additions to supply of magnesite may be considered as domestic production plus imports, for there are no exports of crude or calcined magnesite. Such estimates have been called "consumption," but they do not take into account stocks held at consuming plants.

Magnesite supply in the United States in 1925, in short tons

Class	Sales (domestic)	Imported for consumption	Total
Crude	2,090	487	2,577
Caustic calcined	23,900	17,075	40,975
Dead-burned	29,110	51,320	80,430

WORLD'S PRODUCTION [4]

World's production of magnesite, 1920–1924, by countries, in metric tons

[Unless otherwise stated the quantities in this table represent crude magnesite mined]

Country	1920	1921	1922	1923	1924
Australia:					
New South Wales	6,578	12,465	3,424	6,228	12,697
South Australia	188	175	585	168	131
Victoria	153	130	99	76	77
Western Australia				[1] 2	
Austria [2]	120,347	160,823	281,247	180,292	156,868
Canada	28,159	8,447	7,873	12,079	9,512
Cyprus	([3])	([3])	895	[1] 284	[1] 224
Greece	71,870	60,132	56,642	62,552	65,604
India, British	14,577	20,338	19,582	19,748	24,854
Italy	33,850	9,410	8,700	12,474	13,436
Norway	[4] 2,041	[4] 210	738	2,359	1,976
Russia	17,984	[5] 8,340	10,567	[6] 15,429	([3])
Spain	1,214		303		
Union of South Africa	1,287	1,317	962	1,240	1,825
United States (sold or treated)	275,571	43,458	50,612	133,582	108,952
Venezuela (exports)	2,000	2,450			([3])

[1] Exports.
[2] Data relate to exports of crude and sintered magnesite, the sintered being reduced to crude on the basis of 2.1 tons of crude to 1 ton sintered. In addition, the following quantities of caustic magnesia were exported in the years under review: 1920, 7,126 tons; 1921, 8,252 tons; 1922, 12,635 tons; 1923, 5,341 tons; 1924, 6,431 tons. In 1922 the companies operating reported an output of 427,556 tons of crude magnesite. Similar data for other years are not available.
[3] Data not available.
[4] Exports of crude and sintered magnesite, the sintered being reduced to crude on the basis of 2.1 tons crude to 1 ton sintered.
[5] Computed on the basis of 2.1 tons crude to 1 ton sintered.
[6] Year ended Sept. 30.

NOTES ON THE MAGNESITE INDUSTRY

Ralston, Pike, and Duschak,[5] after an extended investigation of the principles of burning, have announced results of considerable interest. California and Washington magnesite, as well as dolomite

[4] Compiled by L. M. Jones, of the Bureau of Mines.
[5] Ralston, V. C., Pike, R. D., and Duschak, L. H., Plastic Magnesia: Bull. 236, Bureau of Mines 1925, 111 pp.

from various localities, was subjected to burning tests. The results showed that by proper regulation of furnaces a satisfactory material for magnesia cement can be produced from dolomite; calcium oxide takes up CO_2 at a lower temperature than MgO and is reconverted to $CaCO_3$, while the magnesium oxide remains as an oxide. This fact is of extreme importance, since it opens the possibility of utilizing eastern dolomite to produce a plastic magnesia, though a certain amount of caustic calcined magnesite would be necessary to bring caustic burned dolomite up to the standard set for flooring mixtures.

Henton,[6] from a detailed investigation of the various methods of treatment of magnesite and dolomite, concludes that the immense reserves of dolomite contain very large reserves of material suitable for the manufacture of magnesia cements and refractories. He believes that by chemical treatment of calcined material magnesia can be obtained from dolomites as well as from impure magnesite. He gives details of methods of treatment and estimates of cost.

DOMESTIC INDUSTRY

California.—Bradley[7] has recently published a detailed description of the magnesite mines in California and general information on properties, uses, etc. Young[8] described the mining methods and calcining equipment at the Red Mountain deposits, San Benito County, operated by Maltby.

No magnesite was produced in Sonoma and Napa Counties in 1925, and the old Sonoma mine near Guerneville changed hands. The deposits near Alta and Towle, Placer County, were likewise inactive. The magnesite mines near Chinese Camp, Tuolumne County, were bonded to parties who did considerable development but made no shipments. Apparently nothing was done at the deposit near Cima, San Bernardino County, or at the magnesite deposits in Riverside County.

The largest production of magnesite in California in 1925 was from the Red Mountain deposits, 30 miles southeast of Livermore, where caustic calcined magnesite is produced by C. S. Maltby. Dead-burned and caustic calcined magnesite were made at the Maltby plant, 40 miles southwest of Mendota, near Sampson Peak, San Benito County. The plants of the Sierra Magnesite and California Magnesia companies, at Porterville, were largely occupied in making caustic calcined magnesite, but they produced some dead-burned.

Nevada.—Nothing was done on the magnesite deposits near Moapa, Clark County, which have reverted to their original owners, Gentry and Sythus.

Washington.—The Northwest Magnesite Co. operated the Finch mine and produced dead-burned magnesite at its plant at Chewelah, which ran at one-sixth capacity. It is understood that the company will also supply the Plastic Magnesite Co., of Spokane, with crude magnesite for the manufacture of caustic calcined.

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[6] Henton, H. M., Pyro- and Hydro- Treatment of Magnesite and Dolomite: Am. Inst. Min. and Met. Eng., Pamphlet 1573–H, 1926.

[7] Bradley, W. W., Magnesite in California: Calif. State Min. Bur. Bull. 79, 1925.

[8] Young, G. J., "Magnesite mining at Red Mountain, Calif.": Eng. and Min. Jour-Press, vol. 120, Aug. 1, 1925, pp. 178–180.

The Double Eagle mine produced no magnesite in 1925, but was developed for lead-silver ore. Late in the year there was a report that the magnesite deposit had been bonded to Spokane interests.

FOREIGN INDUSTRY

Austria.—Little has appeared in the press relative to Austrian magnesite mines in 1925, though import figures indicate that the mines were active.

Canada.—The Canadian deposits, owned by the North American Magnesite Producers (Ltd.) and the Scottish Canadian Magnesite Co., have been operated jointly for several years.[9] The magnesite is coarse crushed, hand-sorted, reduced to one-quarter-inch size in ball mills, reground to 100 mesh in tube mills, and sintered in powdered, coal-fired rotary kilns at 2,800°. Mill scale is added to bring the iron high enough for refractory use. The product is largely sold to Canadian steel plants.

Greece.—The Grecian Magnesite Marketing Co., of London,[10] was formed in 1925 by the Anglo-Greek Magnesite Co., Van Mannekus Co. (Ltd.), and Huyzers Magnesite Co. The first is the largest producer in Greece, the second is a buyer, and the third owns the only calcining plant in Greece. The syndicate proposes to produce one grade of calcined magnesite and maintain a fixed price. Other producers are thought to produce about one-third of the total output of the country.

Production in Greece was 71,870 metric tons in 1920, 60,132 tons in 1921, 56,642 tons in 1922, 62,552 tons in 1923, and 65,604 tons in 1924. Prices are reported to have been 32 to 35 shillings a ton crude, f. o. b. kilns, and 110 shillings a ton, f. o. b. kilns, for caustic calcined early in 1925.

India.—According to Consul Jenkins,[11] of Calcutta—

> the principal magnesite deposits in India are between the town of Salem and the foot of the Shevaroy Hills in the Madras Presidency, in an area covering about 4½ square miles. The deposits are an intricate network of veins in crystalline rocks, the magnesite constituting one-third to one-half of the whole in the best area covering 130 acres, and from one-sixth to one-tenth of the whole in an area covering 1,140 acres. The Salem deposits are owned by two companies—one English and the other Indian. The English company has operated for 20 years, has four gas-fired kilns, and is reported to be producing 1,000 to 1,200 tons of calcined magnesite a month, the bulk of which is exported to the United States. The Indian company began production in 1921 and has no kilns as yet. Its magnesite carries 47.42 per cent MgO in a dry sample and 96 per cent in calcined material.
>
> Important deposits of magnesite in serpentine are known at Dod Kanya and Dod Katur in Mysore and Hassan districts, State of Mysore, which are estimated at several hundred thousand tons and are under lease to a Bombay company. Crude magnesite is shipped to plants at Kumardhubi and Sakchi, Bengal, for the manufacture of refractory brick.

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[9] Cement, Mill, and Quarry: Vol. 26, June 20, 1925, p. 46; vol. 28, Mar. 5, 1926, p. 40.
[10] Dickerson, C. E., "Greek magnesite situation": Commerce Repts., June 1, 1925, pp. 535–536.
[11] Jenkins, W. L., "Production of crude magnesite and silica in India": Commerce Repts., Aug. 10, 1925, p. 329.

Production of magnesite in India, 1902, 1912, 1921–1924, in long tons

Year	Salem (Madras)	Mysore	Total
1902	(1)	(1)	3,450
1912	(1)	(1)	15,379
1921	(1)	(1)	20,017
1922	18,417	856	19,273
1923	19,336	100	19,436
1924	24,427	34	24,461

[1] Data not available.

Manchuria.—Niinomy [12] described some very large deposits of high-grade magnesite that were discovered in 1913. These deposits, on the Liao-Tung Peninsula in the Province of Sheng-King, cover an area of 60 square kilometers (23 square miles) east of the town of Ta-Shih-Chiao close to the South Manchurian Railroad. The magnesian rocks are magnesite and dolomite, lying in pre-Cambrian schists, and the deposits are estimated to hold a reserve of over 200,000,000 tons of magnesite. Niinomy ascribes the origin of the magnesite to replacement, which view is not in accord with Nishihara's [13] opinions.

Venezuela.—McDonough,[14] United States consul at Caracas, reports that the magnesite deposits on the island of Margarita, which have not produced since 1921 because of litigation, are to resume production. They are leased by an American company, which plans to produce 1,500 long tons a month. The principal mine, La Loma, covers 200 acres and formerly produced at the rate of 1,000 tons a month. Labor is cheap and adequate and transportation easy. Erection of a calcining plant is being considered.

DOLOMITE [15]

DOLOMITE PRODUCTS

Dolomite sold for uses that are, or have been, also supplied by magnesite increased in quantity in 1925 because of the increased tonnage reported as sold or used for refractories. The approximate quantity of crude dolomite used in the manufacture of these products is as follows:

Crude dolomite sold by producers in the United States for certain uses, 1918–1925, in short tons

[Includes dead-burned dolomite, basic magnesium carbonate, sulphite process of paper manufacture, and making of carbon dioxide]

1918	1,413,000	1922	1,074,000
1919	947,000	1923	1,226,000
1920	1,580,000	1924	1,239,000
1921	499,000	1925	1,425,000

[12] Niinomy, K., "The magnesite deposits of Manchuria": Econ. Geol., vol. 20, 1925, pp. 25–53.

[13] Nishihara, H., "Magnesite deposits of Manchuria": Econ. Geol., vol. 21, 1926, pp. 190–193.

[14] McDonough, D. C., "Magnesite production in Venezuela": Commerce Repts., Oct. 5, 1925, pp. 32–33.

[15] Figures on dolomite compiled by A. T. Coons, of the Bureau of Mines.

DEAD-BURNED DOLOMITE

The principal dolomite product included in the category of dead-burned dolomite is that for refractory use. Some manufacturers of this product buy their stone, the sales of which are reported by the quarry companies in terms of crude stone; others quarry their own stone and report only in terms of dead-burned material. The two kinds of material are represented in the accompanying table, as well as the estimated total output in terms of dead-burned dolomite.

Dead-burned dolomite sold or used by producers in the United States, 1918–1925

Year	Reported as raw stone		Reported as dead-burned		Total quantity calculated as dead-burned (short tons)
	Short tons	Value	Short tons	Value	
1918	490,863	$560,209	318,896	$4,097,819	564,000
1919	254,787	394,754	222,036	2,228,602	349,000
1920	612,800	742,020	316,293	3,732,522	623,000
1921	79,480	85,786	107,664	1,113,010	147,000
1922	146,640	172,251	348,838	2,813,946	422,200
1923	205,890	249,993	357,642	3,599,116	460,600
1924	309,010	287,137	328,659	3,209,257	483,200
1925	415,710	375,315	392,145	3,730,509	600,000

BASIC MAGNESIUM CARBONATE

Basic magnesium carbonate, or "technical carbonate," used in "85 per cent magnesia" pipe and boiler coverings decreased in output in 1925. Most manufacturers of this product buy their stone and do not report their output of finished product, but the crude stone used for this purpose has been reported as follows:

Dolomite sold or used by producers in the United States for manufacture of basic magnesium carbonate, 1918–1925

Year	Short tons	Value	Year	Short tons	Value
1918	90,989	$126,255	1922	53,170	$79,313
1919	62,652	82,619	1923	116,410	146,337
1920	57,300	107,107	1924	98,160	129,390
1921	32,050	60,648	1925	98,980	131,440

HIGH-MAGNESIUM LIME FOR SULPHITE PAPER MILLS

An estimate of the high-magnesium lime sold to sulphite paper mills is given below. Exact figures are impossible to obtain, as many lime producers who sell burned lime to paper mills do not specify the kind of paper mill. The quantity sold is expressed as burned lime.

High-magnesium lime sold by producers in the United States to sulphite paper mills, 1918–1925

Year	Short tons	Value	Year	Short tons	Value
1918	88,631	$726,610	1922	70,000	$650,000
1919	83,962	632,930	1923	75,000	750,000
1920	121,817	1,347,321	1924	70,000	625,000
1921	68,992	711,345	1925	53,000	451,000

CARBON DIOXIDE

Sales of crude dolomite for the manufacture of carbon dioxide, as reported from California and Georgia, are as follows:

Dolomite sold by producers in the United States for the manufacture of carbon dioxide, 1918–1925

Year	Short tons	Value	Year	Short tons	Value
1918	16,770	$22,500	1922	38,280	$58,748
1919	16,870	39,895	1923	38,460	52,494
1920	33,040	73,671	1924	34,600	57,105
1921	34,090	124,984	1925	19,740	36,854

MAGNESIUM

PRODUCTION

The sales of domestic metallic magnesium, 1921 to 1925, are given below:

Domestic metallic magnesium sold or used in the United States, 1921–1925

Year	Pounds	Value	Average price per pound		
			Ingot	Powder	Sheet, wire, and castings
1921	48,000	$86,000	$1.30	$2.36	----------
1922	[1] 60,000	[1] 89,000	1.60	1.13	----------
1923	[1] 125,000	[1] 155,000	1.25	1.00	$3.60
1924	[1] 128,000	[1] 150,000	[2] 1.07	[3] 1.10	3.50
1925	245,000	274,400	.86	1.63	3.00

[1] Estimated.
[2] Prices ranged from as low as 90 cents in large contracts to $1.10 for small quantities. The published price established about Mar. 1, 1924, was $1.
[3] This price is an average for old powder sold in competition with old imported stocks and for new powder, manufacture of which began in October, 1924, at a sales price of $1.50 a pound.

The American Magnesium Corporation, of Niagara Falls, N. Y., and the Dow Chemical Co., Midland, Mich., reported the production and sale of domestic magnesium made from calcined magnesite and magnesium chloride. The Elektron Metals Corporation of America suspended operations in 1924 and did not report in 1925. Total sales increased materially during the year and reflect a healthy growth in market development, especially for partly manufactured products.

The decrease in the average price of ingot and the continued increase in that of powder is noteworthy. The sales price of the new domestic powder, $1.63, is about 13 cents higher than that of new powder from Germany.

The sales of castings, sheet, and wire increased considerably and represent a larger proportion of the total consumption. The sales of ingot increased materially in 1925, but sales of rod and tubing declined.

Castings made by the American Magnesium Corporation include aircraft parts, such as crank cases, oil pans, pistons, control pulleys, gasoline line fittings, bearings, instrument parts, control levers, hinges, steps, and supercharger castings; also microscope parts, lens holders, field glasses, parts for moving-picture machines and surveying instruments, golf-club heads, artificial limbs, impellers for air compressors, shuttles, and special bobbins. The price of castings decreased considerably, and as a consequence the sales mounted to record size.

IMPORTS

Magnesium imported for consumption in the United States, 1921–1925

Year	Pounds	Value	
		Total	Average
1921	39,913	$30,592	$0.77
1922	182,939	54,448	.30
1923	13,974	11,576	.83
1924	8,738	6,561	.75
1925	8,326	7,070	.85

Magnesium imported for consumption in the United States, 1924–25, by classes

Class	1924			1925		
	Pounds	Value		Pounds	Value	
		Total	Average		Total	Average
Magnesium, metallic and scrap	3,299	$1,352	$0.410	1,859	$889	$0.478
Alloys (magnesium content)	1,637	641	.392	2,794	1,719	.615
Powder (magnesium content)	2,975	3,930	1.321	2,513	3,139	1.249
Sheets, tubing, ribbons, wire, and all other articles of magnesium	827	638	.771	1,160	1,323	1.141
	8,738	6,561	.751	8,326	7,070	.849

DEVELOPMENT AND OUTLOOK

Interest in magnesium products and appreciation of their physical properties by potential consumers increased materially, and a number of consuming industries are now established.

The use of magnesium as a deoxidizer and desulphurizer continues to broaden. All manufacturers of nickel and Monel metal depend on magnesium, and it is still important as a scavenger for brass and bronze.

The demand for aluminum alloys containing magnesium grew in 1925, as was expected. The properties of these alloys are becoming better understood, and equipment for their fabrication and heat treatment is being supplied. The demand for high-strength aluminum alloys in which magnesium up to 0.5 per cent is essential is increasing. Some interesting properties are being shown by aluminum alloys containing a greater amount of magnesium.[16]

Lead hardened with about 0.04 per cent magnesium is attracting interest as a covering for telegraph and telephone cables.

The new alloy developed by the American Magnesium Corporation in 1924, and subsequently slightly changed in composition, is very resistant to tarnish and corrosion and has physical properties superior to those of alloys previously made. Castings made from it have a tensile strength of 23,000 pounds per square inch and an elongation of 5 per cent.

The new magnesium powder introduced in 1924 is receiving general approval and an increased consumption because of large bulk and low specific gravity. Experiments with this powder as a rubber vulcanizer are being made.

Important progress has been made in the manufacture of sheet and plate. Magnesium sheet of excellent appearance and good physical properties is now produced with comparative ease. The American Magnesium Corporation is now rolling a magnesium-alloy plate suitable in size and strength for aircraft propellers. Other new uses of sheet and plate include lining material for airplanes and pilot boats for dirigibles, high-speed supercharger impellers and entrance buckets, radio diaphragms, resonating disks for automobile horns, and radio rectifiers.

Manufacture of extruded rod and tubing has been improved by the addition of drawing equipment, that makes possible the manufacture of articles within definite tolerances and with improved physical properties. Products developed experimentally are screws for automatic signaling devices, window frames, steering wheels for airships, lightweight meter pointers, shafts for electric meters, tubing for gasoline lines, and frames for squash rackets.

The demand for magnesium wire is limited to a few sizes but has continued to increase. The most popular diameter is 0.025 inch. Magnesium ribbon 0.125 inch wide and 0.006 inch thick is standard. Ribbon, like powder, is now made 99.9 per cent pure. During the past year the method of packing these commodities has been considerably improved to make marketing easier. Degasification of radio tubes continues to consume the major part of the ribbon and wire sold. Chemical laboratories consume a little. There was, however, some increase in the use of ribbon in the manufacture of magnesium oxide coatings of high thermal but low electrical conductivity, by winding magnesium ribbon spirally on an electrical resistor element and subsequently treating it under steam pressure.

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[16] Anderson, R. J., "Aluminum alloys for piston castings must meet varied requirements": Automotive Industries, Dec. 17, 1925, pp. 1030–1034. Archer, R. S., and Jeffries, Z., "New developments in high-strength aluminum alloys": Trans. Am. Inst. Min. and Met. Eng., vol. 71, 1925, pp. 828–863. Chemical and Metallurgical Engineering, "Production of metallic magnesium from fused salts": Vol. 32, June, 1925, p. 573. Miyake, M., and Butts, A., "Metallurgy of magnesium": Eng. and Min. Jour.-Press, vol. 119, May 23, 1925, p. 843. Stoughton, B., and Miyake, M., A Preliminary Study of Magnesium-Base Alloys: Am. Inst. Min. and Met. Eng., Pamphlet 1538–E, 1926.

Although the forging or hot pressing of magnesium continues to be one of the most promising developments, it is still in the experimental stage, and no striking developments were reported in 1925.

The high cost of manufacture is still the greatest difficulty in the development of a market for magnesium. Total sales of commercial products are hardly sufficient to permit a substantial reduction in selling price; but the field is believed to be gradually broadening, and as certain demands assume commercial proportions, reductions in costs and in sales prices are to be expected.

MAGNESIUM SALTS

MAGNESIUM CHLORIDE

Commercial magnesium chloride (guaranteed 97 per cent $MgCl_2.6H_2O$) made from brines and bittern waters was produced and sold by five companies in 1925—Arden Salt Works, Arden, Calif.; California Chemical Co., Chula Vista, Calif.; Dow Chemical Co., Midland, Mich.; Oliver Salt Co., Mount Eden, Calif; and Whitney Chemical Co., Redwood City, Calif. The total sales of flake chloride in 1925 were 59,788,000 pounds, valued at $884,860. The average was $0.0148 a pound. Besides the flake chloride there was produced 2,439,000 pounds of chloride in liquid form, ranging from 23 to 36° B., that was sold as road liquor at an average of $0.0109 a pound.

Imports of magnesium chloride (other than anhydrous) were larger than in 1924. The average value increased slightly. There were no imports of the anhydrous chloride in 1925.

Magnesium chloride imported for consumption in the United States, 1921–1925

Year	Anhydrous			Total		
	Pounds	Value		Pounds	Value	
		Total	Average		Total	Average
1921	(1)	(1)		7,365,812	$85,727	$0.012
1922	(1)	(1)		11,403,837	113,618	.010
1923	56,110	$2,703	$0.048	23,052,385	190,748	.008
1924	136,082	1,820	.013	15,200,433	85,206	.006
1925				15,922,254	105,462	.007

[1] Not separately classified.

MAGNESIUM SULPHATE

Natural magnesium sulphate was produced from epsomite in 1925 by the Epso Products Co., near Oroville, Wash. The American Magnesium Co., in southern California, was developing its deposit but made no shipments. Epsom salts was made from natural brines and bitterns by the Dow Chemical Co., at Midland, Mich., and by the Oliver Salt Co. and the Whitney Chemical Co., at Mount Eden and Redwood City, Calif., respectively.

The total sales of these producers are shown in the following table:

Magnesium sulphate sold by producers in the United States, 1923–1925

Year	Pounds	Value	
		Total	Average
1923	14,300,000	$231,000	$0.016
1924	18,839,901	293,167	.016
1925	22,931,000	341,670	.015

Some of this magnesium sulphate was exported to Canada but was not separately recorded by the Bureau of Foreign and Domestic Commerce. Imports of magnesium sulphate (Epsom salts) are shown in the following table:

Magnesium sulphate (Epsom salts) imported for consumption in the United States, 1921–1925

Year	Pounds	Value	
		Total	Average
1921	12,519,778	$88,153	$0.0070
1922	25,390,734	200,203	.0079
1923	14,455,920	71,566	.0050
1924	8,881,181	57,579	.0065
1925	8,211,228	50,466	.0061

MANUFACTURED MAGNESIUM SALTS

Statistics in the preceding pages deal with substances as they left the producer of the raw material. Other figures are compiled biennially by the Bureau of the Census, which show the quantity and value of manufactured magnesium salts. The raw materials from which these salts were made may include dolomite, magnesite, crude magnesium sulphate, and crude magnesium chloride, but the quantities of these materials so used have not been reported. They are partly or wholly included in the figures of production already given.

Imports of magnesium compounds not shown elsewhere in this report are given below:

Magnesium compounds imported for consumption in the United States, 1921–1925

Year	Calcined magnesia, purified		Carbonate, precipitated	
	Pounds	Value	Pounds	Value
1921	35,182	$7,593	18,514	$2,061
1922	96,792	15,969	36,254	3,385
1923	141,375	30,802	1,046,990	55,137
1924	101,998	29,252	481,439	25,333
1925	162,790	43,356	190,413	13,004

SALT, BROMINE, AND CALCIUM CHLORIDE

By A. T. Coons[1]

SALT

PRODUCTION

Salt produced for sale or use by operators of salt mines, wells, and ponds in the United States in 1925 increased 9 per cent in quantity and 2 per cent in value, as compared with 1924. Keen competition, a tendency to overproduction and lowering of prices, and the closing of small plants or their absorption by larger companies were features of the salt industry in 1925. The average value of all salt sold in 1925 was $3.54 a short ton—24 cents less than in 1924. The average value of evaporated salt, including pressed blocks from evaporated salt, was $7.63—13 cents more than in 1924. The average value of rock salt sold, including pressed blocks from rock salt, was $3.18—45 cents less than in 1924. For a long period there has been a general lessening of the number of salt plants working. In 1880, according to the report of the Tenth Census, 268 salt plants reported operation. There were 161 active plants in 1897, 136 in 1911, 101 in 1924, and 97 in 1925.

Salt sold or used by producers in the United States, 1916–1925

Year	Short tons				Value[1]	
	Manufactured (evaporated)	In brine	Rock salt	Total	Total	Average
1916	2,454,836	2,539,717	1,368,353	6,362,906	$13,645,947	$2.14
1917	2,482,564	2,890,588	1,605,025	6,978,177	19,940,442	2.86
1918	2,724,203	2,830,600	1,683,941	7,238,744	26,940,361	3.72
1919	2,392,290	2,850,639	1,639,973	6,882,902	27,074,694	3.93
1920	2,409,924	2,819,916	1,610,189	6,840,029	29,894,075	4.37
1921	1,931,243	1,577,335	1,472,576	4,981,154	24,557,966	4.93
1922	2,276,683	2,569,042	1,947,124	6,792,849	27,464,838	4.04
1923	2,239,872	2,787,239	2,103,602	7,130,713	27,795,941	3.90
1924	2,224,555	2,513,853	2,064,707	6,803,115	25,747,048	3.78
1925	2,235,170	2,819,690	2,342,640	7,397,500	26,162,361	3.54

[1] The values are f. o. b. mine or refinery, and do not include cost of cooperage or containers.

Sales of rock salt, including pressed blocks made from rock salt, increased 13 per cent over 1924 and the salt content of the brine produced and used by producers for the manufacture of chemicals

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

increased 12 per cent over 1924. Evaporated salt showed only a slight increase—less than 1 per cent—compared with 1924.

Salt sold or used by producers in the United States, 1922–1925, by States

State	1922		1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
California	257,790	$1,211,197	252,465	$1,327,917	268,112	$1,361,166	292,480	$1,420,924
Idaho	21	240	31	310	33	350	(1)	(1)
Kansas	759,459	3,849,427	845,163	3,570,135	794,303	2,781,217	812,540	2,494,423
Louisiana	336,852	1,657,708	359,161	1,808,762	383,104	2,182,797	500,350	2,218,265
Michigan	2,005,088	8,693,604	2,127,412	8,684,148	1,918,463	7,864,838	2,172,600	7,710,331
New Mexico	718	5,747	525	5,250	1,700	17,000	(1)	(1)
New York	1,960,867	7,066,409	2,065,842	7,431,155	1,972,808	6,739,597	2,053,970	7,133,244
Ohio	1,105,757	3,749,564	1,102,387	3,695,248	1,102,214	3,641,585	1,173,590	4,116,625
Porto Rico	(1)	(1)	5,875	8,225	14,466	29,932	12,060	28,751
Utah	81,909	387,093	81,449	468,765	78,577	463,143	88,150	432,846
West Virginia	25,188	283,257	31,589	284,196	37,561	258,089	25,870	180,053
Undistributed [2]	259,200	560,592	258,814	511,830	231,774	407,334	265,890	426,899
	6,792,849	27,464,838	7,130,713	27,795,941	6,803,115	25,747,048	7,397,500	26,162,361

[1] Included under "Undistributed."
[2] 1922, Porto Rico, Texas, and Virginia; 1923, Nevada, Texas, and Virginia; 1924, Texas and Virginia; 1925, Idaho, Nevada, New Mexico, Texas, and Virginia.

The States leading in salt production—Michigan, New York, Ohio, Kansas, and Louisiana—showed increased outputs, but several of the States of lower rank showed decreases.

Exclusive of rock salt and the salt content of brine used in manufacture of chemicals, the quantity of salt produced by different methods of manufacture in 1925 differed but little from that in 1924. There was a slight decrease in the quantity of salt manufactured in open pans or grainers and an increase in that evaporated in vacuum pans. The quantity of salt made by solar evaporation and of pressed blocks made from evaporated salt and from rock salt were virtually the same for both years.

Salt sold or used by producers in the United States, 1924–25, by methods of manufacture

Method of manufacture	1924		1925	
	Short tons	Value	Short tons	Value
Evaporated in open pans or grainers	741,056	$6,721,943	734,990	$6,690,218
Evaporated in vacuum pans	1,028,895	7,598,168	1,043,230	8,038,228
Solar evaporated	318,884	1,294,093	321,470	1,252,610
Pressed blocks from evaporated salt	135,720	1,059,484	135,480	1,069,685
Rock	2,028,083	7,238,159	2,306,910	7,237,981
Pressed blocks from rock salt	36,624	263,260	35,730	206,818
Salt in brine (sold or used as such)	2,513,853	1,571,941	2,819,690	1,666,821
	6,803,115	25,747,048	7,397,500	26,162,361

New York, Kansas, Louisiana, and Michigan produced more than 99 per cent of the rock salt reported in 1925.

Rock salt sold by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	1,368,353	$2,665,270	1921	[1] 1,472,576	[1] $6,693,923
1917	1,605,025	3,897,595	1922	[1] 1,947,124	[1] 7,489,644
1918	1,683,941	5,684,661	1923	[1] 2,103,602	[1] 7,843,419
1919	1,639,973	6,224,920	1924	[1] 2,064,707	[1] 7,501,419
1920	[1] 1,610,189	[1] 7,048,315	1925	[1] 2,342,640	[1] 7,444,799

[1] Includes pressed blocks made of rock salt, as follows: 1920, 15,182 tons, valued at $172,211; 1921, 20,148 tons, valued at $169,244; 1922, 38,593 tons, valued at $245,174; 1923, 38,043 tons, valued at $281,302; 1924, 36,624 tons, valued at $263,260; 1925, 35,730 tons, valued at $206,818.

Evaporated salt sold or used by producers in the United States, 1924–25, by States

State	1924		1925	
	Short tons	Value	Short tons	Value
California	255,252	$1,309,726	277,010	$1,351,327
Kansas	264,222	1,836,749	244,310	1,719,347
Michigan	804,385	6,587,768	841,970	6,512,752
New Mexico	1,700	17,000	(1)	(1)
New York	393,276	2,929,884	384,190	3,121,631
Ohio	310,625	2,841,063	287,020	3,220,936
Porto Rico	14,466	29,932	12,060	28,751
Utah	76,423	452,980	86,100	424,035
West Virginia	37,561	258,089	25,870	180,053
Undistributed [2]	66,645	410,497	76,640	491,909
	2,224,555	16,673,688	2,235,170	17,050,741

[1] Included under "Undistributed."
[2] 1924, Idaho, Louisiana, and Texas; 1925, Louisiana, Nevada, New Mexico, and Texas.

The production of pressed blocks, from both evaporated salt and rock salt, as reported by the original producers of the salt and shown in the following table, does not represent the entire pressed-block industry, because some firms that do not produce salt are making pressed blocks from salt bought in the open market. Pressed blocks from evaporated salt are made chiefly by salt producers in Michigan and Kansas, but also in Texas, Ohio, Utah, and California. Pressed blocks from rock salt are made by salt producers in Kansas, Michigan, and New York.

In 1925 the average value of pressed blocks from evaporated salt was $7.90 a ton; the average value of the blocks made from rock salt was $5.79.

Pressed salt blocks sold by original producers of the salt in the United States, 1918–1925

Year	Short tons	Value	Year	Short tons	Value
1918	94,150	$939,900	1922	172,682	$1,554,429
1919	119,510	1,358,757	1923	166,116	1,544,548
1920	129,224	1,515,041	1924	172,344	1,322,744
1921	117,739	1,275,483	1925	171,210	1,276,503

IMPORTS AND EXPORTS

According to figures obtained from the Bureau of Foreign and Domestic Commerce, the salt imported into and exported from the United States in the last 10 years has been as follows:

Salt imported for consumption in the United States, 1916–1925

Year	In bags, barrels, and other packages		In bulk		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	24,402	$200,290	97,677	$142,298	122,079	$342,588
1917	13,472	139,339	51,450	140,796	64,922	280,135
1918	10,259	148,128	30,031	133,340	40,290	281,468
1919	9,676	137,627	49,838	105,077	59,514	242,704
1920	29,567	240,923	108,087	435,576	137,654	676,499
1921	38,374	333,282	54,721	197,749	93,095	531,031
1922	[1] 24,392	[1] 216,718	89,530	305,620	113,922	522,338
1923	[1] 36,185	[1] 240,970	52,565	142,288	88,750	383,258
1924	[1] 40,426	[1] 209,641	48,512	114,451	88,938	324,092
1925	[1] 26,973	[1] 188,912	58,815	127,915	85,788	316,827

[1] Includes salt imported for curing fish, as follows: 1922, 2,252 short tons, valued at $5,549; 1923, 16,472 tons, $46,260; 1924, 27,096 tons, $61,581; 1925, 17,976 tons, $51,332.

Salt imported into the United States, 1922–1925, by countries

[General imports]

Country	1922		1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
North America:								
Canada	1,889,300	$14,547	3,064,500	$17,736	3,476,843	$20,554	3,744,003	$20,680
Guatemala			500	26				
Mexico							3,875	31
Newfoundland and Labrador	115,000	2,800						
West Indies—								
British—								
Barbados			1,012,600	1,153				
Jamaica	1,034,100	1,379	3,575,700	4,169	15,422,360	16,548	12,604,350	19,080
Trinidad and Tobago	3,265,400	3,668						
Other British	59,731,400	77,966	70,100,600	79,781	50,040,105	57,446	43,797,963	47,363
Dominican Republic							209,437	380
Dutch	11,016,100	15,713	3,050,600	4,431	4,094,929	5,181	10,546,196	11,911
French			2,390,000	2,785	180,000	270	198,414	360
Virgin Islands of the United States							4,000	18
South America:								
Chile	17,300	99						
Europe:								
Belgium			440,000	2,070			17	2
France							232,960	2,633
Germany	110,656,000	274,511	57,453,100	135,959	40,951,106	72,226	25,013,932	44,167
Italy			10,304,000	10,350				
Malta, Gozo, and Cyprus Islands					22,400	86		
Netherlands			561,100	2,503	896,000	1,200		
Spain	25,552,600	27,047	17,277,600	16,396	35,996,400	29,947	30,128,000	31,066
United Kingdom	14,104,100	105,172	16,448,500	121,253	15,764,896	121,173	15,434,656	123,994
Asia:								
Hongkong			200	57	280	24		
Japan	3,000	24	100	3				
Africa:								
Algeria and Tunisia			11,200,000	5,646	31,997,564	18,626	15,423,275	10,459
Portuguese	243,200	110			380,800	110		
Oceania:								
Australia							2,240	63
French							2,678,089	7,576
	227,627,500	523,036	196,879,100	404,318	199,223,683	343,391	160,021,407	319,783

Salt exported from the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	84,065	$567,441	1921	109,563	$1,415,471
1917	113,993	1,000,773	1922	134,989	1,429,172
1918	136,783	1,677,577	1923	125,529	1,211,226
1919	119,416	1,396,625	1924	144,945	1,288,376
1920	139,272	1,901,593	1925	155,079	1,219,935

Salt exported from the United States, 1922–1925, by countries

Country	1922		1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
North America:								
Bermuda	182,100	$2,130	186,530	$2,350	223,036	$2,905	237,183	$3,034
British Honduras	378,984	3,833	344,563	3,028	330,945	2,843	280,815	2,317
Canada	208,495,592	928,477	188,954,715	696,709	217,560,848	754,836	231,093,426	672,285
Central American States—								
Costa Rica	200,676	1,658	185,474	2,000	187,533	2,378	92,310	1,124
Guatemala	891,415	5,373	901,808	5,394	189,319	3,082	230,384	2,779
Honduras	2,377,529	21,294	2,938,624	27,093	2,122,121	20,318	2,520,355	22,929
Nicaragua	537,263	7,611	633,060	8,482	762,409	8,856	678,543	9,185
Panama	1,403,816	13,522	1,802,170	16,676	1,730,796	15,499	1,686,112	15,569
Salvador	792	54	40,096	274	948	22	102,846	705
Mexico	9,562,151	94,964	7,375,088	88,071	10,292,980	97,881	11,480,952	111,072
Miquelon, Langley, etc	1,500	40	2,564	78	1,080	34	5,340	140
Newfoundland and Labrador	112,200	554	678,640	1,135	91,635	1,107	171,854	1,885
West Indies—								
British—								
Barbados			100	4			680	11
Jamaica	4,436	88	4,496	107	272,136	1,631	268,808	1,215
Trinidad and Tobago	24	3			350	10		
Other British	37,369	421	15,415	297	15,472	297	4,716	141
Cuba	41,443,389	268,463	38,895,196	267,960	51,662,620	292,033	56,794,230	287,722
Dominican Republic	186,315	4,621	199,527	5,423	202,357	4,601	167,505	4,793
Dutch	96	5	440	23	620	35	7,029	89
French	4,396	122	934	27			300	10
Haiti	4,678	197	4,428	155	7,749	294	18,358	537
Virgin Islands of the United States	4,716	76	34,634	159	2,852	86	2,895	90
South America:								
Argentina	275	14	383,216	2,939	12,500	163	47,350	1,224
Bolivia					1,000	165		
Brazil	70	11						
Chile	1,460	63	705	24	1,030	37	1,780	66
Colombia	80,150	1,348	100,380	1,541	103,332	2,037	68,737	1,002
Ecuador	202	12			450	45	1,544	130
Guiana—								
British					96	2		
Dutch			14,255	232				
Paraguay			1,701	74	1,200	44		
Peru	6,560	40			60	6	500	14
Uruguay			22,000	118			500	47
Venezuela	2,428	36	16,102	307			170	26
Europe:								
Denmark			4,800	165				
Esthonia	300	10						
France			24,000	210	8,018	71	23,287	183
Germany	138	4			8,625	73	18,818	145
Greece	8,800	89						

Salt exported from the United States, 1922–1925, by countries—Continued

Country	1922		1923		1924		1925	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Europe—Continued.								
Iceland and Faroe Islands	3,700	$115			1,000	$36	1,300	$45
Latvia	672	17						
Netherlands	2,500	79			1,526	19		
Poland and Danzig			880	$50				
Rumania	700	15						
Russia	9,924	127	764	28				
Spain	2,240	11						
Sweden							11,000	120
United Kingdom	3,969	114			142,274	755	158,080	887
Yugoslavia and Albania					1,400	50		
Asia:								
Armenia and Kurdistan	785	37						
China	29,759	2,344	31,522	2,239	54,115	3,314	56,124	4,680
Kwantung	112	12	1,530	88	3,000	260	2,940	259
Ceylon	1,160	125	1,503	155	2,750	273	3,086	292
Chosen	4,448	130	6,520	188	1,398	33	3,882	89
East Indies—								
British—								
India	5,121	242	5,404	535	4,522	412	7,542	736
Straits Settlements	2,387	255	168	18	696	70	600	57
Dutch			384	44				
Far Eastern Republic	7,488	264	20,180	168				
Hongkong	36,853	2,232	30,687	2,205	42,700	2,652	52,537	2,429
Indo-China, French			1,417	87				
Japan	496,750	1,944	2,167,294	10,762	159,740	1,013	162,966	735
Java and Madura	5,736	556	3,726	380	2,220	183	1,362	118
Palestine and Syria	480	47						
Philippine Islands	185,244	8,989	2,718,770	17,955	403,938	11,105	462,587	9,931
Russia	2,100	115					206,092	1,059
Siam	1,359	147	3,492	376	1,550	155	5,040	500
Africa:								
Belgian Congo	21,000	268						
British Africa—								
South			2,880	124				
West	214	8						
Canary Islands					4,000	120		
Egypt			375	14				
Liberia							978	20
Portuguese Africa—								
East			4,560	50				
Other			399	18	274	8	115	7
Oceania:								
British—								
Australia	2,530,774	44,137	1,647,691	31,862	2,812,921	49,063	2,422,637	46,749
New Zealand	444,488	9,157	364,180	9,153	98,300	2,815	302,793	7,429
Other British	17,170	316	11,500	187	14,750	298	14,900	330
French	230,601	2,236	261,357	3,412	296,762	3,887	252,935	2,429
Other			4,326	73	45,150	464	21,936	565
	269,977,554	1,429,172	251,057,170	1,211,226	289,889,103	1,288,376	310,158,759	1,219,935

WORLD'S PRODUCTION

The quantities of salt produced in the chief countries of the world during the five years 1920–1924 are shown in the following table, compiled by L. M. Jones, of the Bureau of Mines:

Salt produced in the chief countries of the world, 1920–1924, in metric tons

Country [1]	1920	1921	1922	1923	1924
North America:					
Canada	190,376	149,374	164,920	187,773	191,176
Mexico [2]	67,000	67,000	67,000	67,000	67,000
Panama [3]	826	677	826	(4)	(4)
United States—					
Rock salt	1,460,731	1,335,891	1,766,392	1,908,346	1,873,061
Other	4,744,406	3,182,912	4,395,945	4,560,494	4,298,589
West Indies—					
British—					
Bahamas [3]	1,830	3,200	3,079	2,723	1,595
Ragged Island [3]	509	(4)	(4)	(4)	(4)
Turks and Caicos Islands [3]	48,394	(4)	66,704	58,992	53,167
Dutch [3]	25,524	17,810	18,459	11,795	8,894
South America:					
Argentina [5]	82,464	75,968	93,698	110,701	122,432
Chile	33,951	39,466	33,743	38,242	36,093
Colombia [2]	29,000	29,000	29,000	29,000	29,000
Peru	27,172	26,350	26,126	26,522	27,030
Venezuela [2]	30,000	30,000	30,000	30,000	30,000
Europe:					
Austria—					
Rock salt	2,455	1,815	2,328	1,520	2,744
Other	116,482	126,754	142,072	81,771	108,425
Czechoslovakia	30,990	91,200	128,179	134,080	124,773
France—					
Rock salt and salt from springs	840,001	793,151	541,340	1,188,586	1,288,590
Other	432,776	212,251	238,250	337,703	(4)
Germany—					
Rock salt	2,596,825	1,655,753	2,684,318	1,583,978	1,596,416
Other	335,900	304,466	391,178	291,518	377,277
Greece	57,285	65,000	67,500	59,908	68,542
Italy—					
Rock salt	46,989	45,440	49,802	52,754	56,896
Other	675,129	468,151	740,507	711,892	750,424
Netherlands—Rock salt	24,857	25,465	28,334	26,813	32,054
Poland	245,604	301,612	295,403	363,307	275,261
Portugal [3]	118,368	(4)	(4)	106,280	(4)
Rumania	246,977	232,818	285,212	306,612	302,761
Russia [6]	579,162	983,676	789,516	966,456	[7] 1,192,809
Spain—					
Rock salt	62,647	37,996	114,400	98,619	105,450
Other	928,898	475,143	566,480	617,207	862,856
Switzerland	448,000	339,000	64,268	68,026	(4)
United Kingdom—					
Great Britain and Isle of Man—					
Rock salt	86,358	24,525	26,998	38,494	43,076
Other	[8] 1,985,459	[8] 1,302,609	1,756,017	1,860,170	2,016,914
Ireland—					
Rock salt	23,460	11,760	(4)	(4)	(4)
Other	(8)	(8)			
Yugoslavia	23,400	34,922	43,872	[2] 46,000	48,864
Asia:					
Ceylon	16,775	13,952	39,623	28,834	9,412
China (including Kwantung)	[9] 2,104,000	[9] 2,075,000	[2] 2,000,000	[2] 2,000,000	[2] 2,000,000
Chosen [10]	54,921	56,000	45,000	40,200	(4)
Cyprus [3]	625	899	3,022	778	813
East Indies—					
Dutch	135,660	133,522	170,246	150,636	132,026
India—					
British (including Aden)—					
Rock salt	213,207	150,414	210,639	121,594	192,274
Other	1,443,079	1,407,881	1,469,804	1,688,150	1,457,258
Portuguese [2]	12,000	12,000	12,000	12,000	12,000

[1] In addition to the countries shown in the table, there are others in which salt is produced. For some of these figures of production are available for years prior to those given in the table and may be found in earlier volumes of Mineral Resources.
[2] Estimated annual production.
[3] Exports.
[4] Data not available.
[5] Railway shipments.
[6] Includes Asiatic Russia.
[7] Year ended Sept. 30.
[8] Brine-salt production of Ireland included with that of Great Britain. Separate data not available.
[9] Estimated on approximate gross revenue under Salt Gabelle.
[10] In 1920 additions were made to the salt works, which increased the annual capacity to 71,400 metric tons. (Financial and Economic Annual of Japan, 1922.)

Salt produced in the chief countries of the world, 1920–1924, in metric tons—Continued

Country	1920	1921	1922	1923	1924
Asia—Continued.					
Japan—					
Japan proper [11]	543,956	515,103	665,096	479,908	637,169
Taiwan	51,976	101,540	138,000	239,200	136,200
Philippine Islands	62,383	31,247	69,345	76,194	28,919
Siam [12]	50,737	29,824	26,542	32,948	40,564
Turkey [2]	100,000	100,000	100,000	100,000	100,000
Africa:					
Algeria	28,169	18,255	20,208	25,079	23,541
Belgian Congo [2]	80	80	80	80	80
Egypt [3]	225,811	153,651	186,793	66,333	68,487
Eritrea [3]	20,000	20,000	20,000	20,000	20,000
Mauritius [2]	1,800	1,800	1,500	1,500	1,500
Nigeria [2]	400	400	400	400	400
Portuguese West Africa (Angola)	[3] 2,746	[3] 2,175	[3] 2,000	[3] 2,000	[3] 2,000
Somaliland, British [3]	504	906	1,572	1,744	(4)
Tanganyika Territory	(4)	(4)	2,427	1,918	4,629
Tunisia	41,086	32,800	51,950	72,982	123,606
Union of South Africa	80,603	62,033	75,806	62,170	76,369
Oceania:					
Australia (South Australia) [13]	72,008	57,399	49,438	51,093	63,693

[2] Estimated annual production.
[3] Exports.
[4] Data not available.
[11] Fiscal year ended Mar. 31 of the year following that stated. The figures do not include output from salt beds which, though situated on Government beach lands, have no fixed areas.
[12] Exports for fiscal year ended Mar. 31 of the year following that stated.
[13] The other States of Australia produce salt, but figures of production are not available.

LOCALITIES PRODUCING SALT IN THE UNITED STATES IN 1925

The salt deposits in the United States that furnish salt for commercial purposes are, with the exception of small deposits used for local supply, confined to definite regions in the northeastern, south central, and western parts of the country. Michigan, New York, and Ohio, included in the first group, furnished 73 per cent of the total salt sold or used by producers in 1925. Kansas and Louisiana, in the central belt of States, are the next largest producers, and California is chief among the Western States.

The salt is marketed as evaporated salt, rock salt, and salt in brine for the manufacture of chemicals. To furnish information often requested regarding the operation of salt properties, the producing companies in 1925, the situation of their plants, and the nature of the salt sold or used by them, as reported to the Bureau of Mines, are given by States on the following pages.

CALIFORNIA

In California salt is obtained from sea water, from salt springs, lakes, etc., and rock salt. The greater part of the production is from the solar evaporation of sea water, especially along the shores of San Francisco Bay in Alameda and San Mateo Counties. The operators in 1925 were as follows:

Alameda County:
Alvarado—Leslie-California Salt Co. (successors to California Salt Co. and Continental Salt & Chemical Co.) (address, 155 Montgomery Street, San Francisco); solar evaporation.
——— Pioneer Salt Co. (address, 200 Sacramento Street, San Francisco); solar evaporation.

Alameda County—Continued.
Alvarado—Turk Island Salt Co.; solar evaporation.
Mount Eden—American Salt Co. (address, 781 Green Street, San Francisco); solar evaporation.
——— Dumbarton Land & Improvement Co. (address, 504 Standard Oil Building, San Francisco); solar evaporation.
——— August L. Johnson (address, Hayward); solar evaporation.
——— Oliver Salt Co.; evaporated salt (open pans or grainers and vacuum pans). This company also produces as by-products magnesium chloride, magnesium sulphate, and potassium salts.
——— Union Pacific Salt Co. (address, 10 Embarcadero, San Francisco); solar evaporation, refined and coarse salt.
Newark—Arden Salt Works (address, 504 Standard Oil Building, San Francisco); solar evaporation.
——— Plummer Bros. (address 216 Pine Street, San Francisco); solar evaporation.
Kern County:
Saltdale (Ceneda)—Consolidated Salt Co. of California (address, 2461 Hunter Street, Los Angeles). On a playa known as Cane Lake; solar evaporation.
Saltdale (Toby)—Fremont Salt Co. (address, Bakersfield). On Cane Lake; solar evaporation.
Los Angeles County: Long Beach (Anaheim Road)—Long Beach Salt Co.; solar evaporation.
Modoc County: Cedarville (8 miles southeast)—Surprise Valley Salt Works; solar evaporation.
Monterey County: Moss Landing—Monterey Bay Salt Co.; solar evaporation.
San Bernardino County:
Amboy (Saltus)—California Rock Salt Co. (address, 2461 Hunter Street, Los Angeles); rock salt, also calcium chloride from Amboy playa.
Trona—American Trona Corporation (address, 233 Broadway, New York, N. Y.).
The salt produced by this company is a by-product from the production of potassium salts, borax, trona, and other natural salts of sodium obtained from Borax Lake, a huge playa.
San Diego County: San Diego (south end of San Diego Bay)—Western Salt Co.; solar evaporation.
San Mateo County:
Leslie—Leslie-California Salt Co. (successors to Leslie Salt Refining Co.) (address, 155 Montgomery Street, San Francisco); solar evaporation, refining by vacuum pans, pressed blocks from evaporated salt.
Redwood City—San Francisco Salt Refinery; solar evaporation.

IDAHO

A small amount of rock salt was produced in the southeastern part of Idaho in 1925 by John W. Booth, of Alpine, Wyo.

KANSAS

In 1925 Kansas ranked fourth among the salt-producing States. The salt sold in the State is rock salt and evaporated salt made from brines obtained from solution of rock salt. The companies reporting in 1925 were as follows:

Ellsworth County:
Kanopolis—Crystal Salt Co. (address, Equitable Building, Denver, Colo.); rock salt.
——— Independent Salt Co. (address, 76 West Monroe Street, Chicago, Ill.); rock salt.
Harper County: Anthony—The Anthony Ice & Salt Co.; evaporated salt (open pans or grainers), pressed blocks from evaporated salt.
Reno County:
Hutchinson—The Barton Salt Co.; evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.

Reno County—Continued.
Hutchinson—Carey Salt Co. (west plant); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
——— ——— (rock salt mine); rock salt, pressed blocks from rock salt.
——— Morton Salt Co. (address, Railway Exchange, Chicago, Ill.); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
Rice County:
Little River—Morton Salt Co. (successors to Kansas Rock Salt Co., June, 1925) (address, Railway Exchange, Chicago, Ill.); rock salt.
Lyons—American Salt & Coal Co. (address, Waldheim Building, Kansas City, Mo.); evaporated salt (open pans or grainers), pressed blocks from evaporated salt, rock salt, pressed blocks from rock salt.
——— Western Salt Co. (address, Manufacturers Exchange, Kansas City, Mo.); evaporated salt (vacuum pans), pressed blocks from evaporated salt, rock salt, pressed blocks from rock salt.
Sterling—Sterling Salt Co.; evaporated salt (open pans or grainers).

LOUISIANA

Louisiana in 1925 ranked fifth in the quantity of salt produced. Rock salt until recently formed the entire output, but now evaporated salt is being manufactured. The firms reporting in 1925 were:

Iberia Parish:
Avery Island—Avery Rock Salt Mining Co. (address, Scranton, Pa.); rock salt.
Jefferson Island—Jefferson Island Salt Mining Co. (Inc.) (address, Louisville, Ky.); rock salt, pressed blocks from rock salt.
Weeks Island—Myles Salt Co. (Ltd.) (address, New Orleans); rock salt, pressed blocks from rock salt.
St. Martin Parish:
Anse La Butte—Lafayette Salt Co. (Inc.) (address, Lafayette); evaporated salt (vacuum pans).
Lafayette—Star Salt Corporation; evaporated salt (vacuum pans).

MICHIGAN

Michigan ranked first among the salt-producing States in 1925. The output is obtained from both rock salt and natural brine. The large quantity of brine used in the manufacture of chemicals keeps the State in first place, but in actual production of salt as such Michigan ranks second and New York first. In 1925 reports of production were received from the following companies:

Bay County: Bay City—Halverson Lumber & Salt Co.; evaporated salt (grainers).
Manistee County:
Manistee—Ruggles & Rademaker; evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
——— Louis Sands Salt & Lumber Co.; evaporated salt (open pans or grainers). Company in process of liquidation.
Mason County: Ludington—Morton Salt Co. (address, Railway Exchange, Chicago, Ill.); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
Midland County: Midland—The Dow Chemical Co.; evaporated salt (vacuum pans), also bromine, magnesium chloride, and calcium chloride.
Saginaw County:
Carrollton—Mershon, Eddy, Parker Co. (address, Saginaw); evaporated salt (open pans or grainers).
——— Saginaw Salt Products Co. (address, Saginaw); evaporated salt (open pans or grainers), pressed blocks from evaporated salt, also calcium chloride.

Saginaw County—Continued.
Saginaw—Bliss & Van Auken Lumber Co.; evaporated salt (open pans or grainers). Plant shut down and manufacture of salt abandoned during the year 1925.
——— Estate of Edward Germain; evaporated salt (open pans or grainers).
——— National Plate Glass Co. (address, Detroit); evaporated salt (open pans or grainers). Calcium chloride from the brine of this company is recovered by the Saginaw Chemical Co.
——— Strable Lumber & Salt Co.; evaporated salt (open pans or grainers).
St. Clair County:
Marine City—Michigan Salt Works; evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
Port Huron—Morton Salt Co. (address, Railway Exchange, Chicago, Ill.); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
St. Clair—Diamond Crystal Salt Co.; evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
Wayne County:
Delray—Inland Delray Salt Co.; evaporated salt (open pans or grainers, vacuum pans). This company ceased production December, 1925.
——— The Solvay Process Co. (address, Syracuse, N. Y.); brine for the manufacture of chemicals.
Detroit—Detroit Rock Salt Co. (address, Scranton, Pa.); rock salt.
——— Mulkey Salt Co.; evaporated salt (open pans or grainers, vacuum pans).
Ecorse—Worcester Salt Co. (address, 71 Murray Street, New York, N. Y.); evaporated salt (open pans or grainers, vacuum pans).
Wyandotte—Michigan Alkali Co.; brine for the manufacture of chemicals.
——— Pennsylvania Salt Manufacturing Co. (address, Widener Building, Philadelphia, Pa.); evaporated salt (open pans or grainers), brine for the manufacture of chemicals.

NEVADA

In 1925 the C. W. Kinney Salt Co. reported a production of solar salt at Sand Springs, near Fallon, Churchill County.

NEW MEXICO

Production of salt in New Mexico in 1925 was reported at Salt Lake, Catron County, by Frank A. Hubbell Co., Albuquerque. The Willard Salt Co., of Willard, purchased the plant of the New Mexico Salt Refining Co. and started to produce stock salt in January, 1926.

NEW YORK

If the salt content of brine used in the manufacture of chemicals is included New York ranked second among the salt-producing States, but it ranked first in sales of crystallized salt. The salt industry is older than that of any other salt-producing State. Both evaporated and rock salt are supplied by producers, but excepting a small amount obtained by solar evaporation of spring water, the entire product is from rock salt. Brine for evaporated salt is obtained by dissolving the rock salt with water that is allowed to flow into the beds and is pumped out when saturated. The producing companies in 1925 were as follows:

Genesee County: Le Roy—Le Roy Salt Co.; evaporated salt (open pans or grainers).

Livingston County:
Cuylerville (Halite)—Sterling Salt Co. (address, 29 Broadway, New York); rock salt.
Piffard—Alex. Kerr Bro. & Co. (Inc.) (address, 516 North Delaware Avenue, Philadelphia, Pa.); evaporated salt (open pans or grainers, vacuum pans).
Retsof—Retsof Mining Co. (address, Scranton, Pa.); rock salt.
Onondaga County:
Salina [2]—Thomas Gale (address, Syracuse); solar salt.
Solvay and Tully—The Solvay Process Co. (address, Syracuse); evaporated salt (open pans or grainers), brine for the manufacture of chemicals and refined salt as a by-product.
Syracuse [2]—Thomas P. Murray (address, Liverpool); solar salt.
Schuyler County:
Watkins—International Salt Co. (address, Scranton, Pa.); evaporated salt (open pans or grainers, vacuum pans).
——— The Watkins Salt Co.; evaporated salt (open pans or grainers).
Tompkins County:
Ithaca (east shore Cayuga Lake)—Remington Salt Co.; evaporated salt (open pans or grainers, vacuum pans).
Ludlowville—International Salt Co. (address, Scranton, Pa.); evaporated salt (open pans or grainers, vacuum pans).
Myers—Cayuga Rock Salt Co. (Inc.); rock salt. This company recently deepened its mine 500 feet, and at 2,000 feet is mining a bed of high-grade rock salt which is much cleaner than that formerly worked on the 1,500-foot level.
Wyoming County:
Rock Glen—Rock Glen Salt Co.; evaporated salt (open pans or grainers, vacuum pans). This plant has been taken over by the International Salt Co. and partly dismantled.
Silver Springs—Worcester Salt Co. (address, 71 Murray Street, New York); evaporated salt (open pans or grainers, vacuum pans).

OHIO

Ohio ranked third in the production of salt in 1925. The larger part of the output is used in the form of brine for the manufacture of chemicals.

Cuyahoga County: Cleveland—The Union Salt Co.; evaporated salt(open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
Lake County: Painesville—Diamond Alkali Co. (address, 511 Wood Street, Pittsburgh, Pa.); brine for the manufacture of chemicals.
Medina County: Wadsworth—The Wadsworth Salt Co.; evaporated salt. Plant idle in 1925 during reorganization of the company.
Meigs County:
Minersville—Pomeroy Salt Corporation (address, Pomeroy); evaporated salt (open pans or grainers), also bromine and calcium chloride.
Pomeroy and Syracuse—Brocalsa Chemical Co. (address, Syracuse); evaporated salt (open pans or grainers), also bromine and calcium chloride.
Summit County:
Barberton—Pittsburgh Plate Glass Co.; brine for the manufacture of chemicals.
Kenmore—The Colonial Salt Co. (address, Akron); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.
Wayne County: Rittman—The Ohio Salt Co. (address, Wadsworth); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.

[2] The plants at Salina and Syracuse represent the last of the operations on the Onondaga Salt Springs Reservation. Production records for this reservation are available since 1797. Until 1908 the springs were controlled by the State, which received a royalty on the output.

PORTO RICO

Salt was reported as produced in Porto Rico in 1925 by the following:

F. Carrera & Hno., Mayaguez; works at Cabo Rojo, Guanica, and Salinas.
Alejandro Franceschi, Yauco; works at Guanica.
Miguel Antonio Ramirez, San German; works at Lajas.

TEXAS

Salt was produced in Texas in 1925 as follows:

Anderson County: Palestine—Palestine Salt & Coal Co.; evaporated salt (open pans or grainers), pressed blocks from evaporated salt.
Van Zandt County: Grand Saline—Morton Salt Co. (address, Railway Exchange, Chicago, Ill.); evaporated salt (open pans or grainers, vacuum pans), pressed blocks from evaporated salt.

Salt formed by the evaporation of the waters of playas and lagoons is also used locally by cattlemen but there is no record of the quantity so used.

UTAH

Production of salt in Utah in 1925 was reported by the following companies:

Salt Lake County: Saltair—Inland Crystal Salt Co. (address, 133 Regent Street, Salt Lake City); solar evaporation, pressed blocks from evaporated salt.
Sanpete County: Axtell—Inland Crystal Salt Co. (address, 133 Regent Street, Salt Lake City); rock salt.
Sevier County:
Redmond—Gunnison Valley Salt Co.; rock salt.
——— Paulson Bros.; rock salt.
Tooele County:
Burmester—Morton Salt Co. (address, Railway Exchange, Chicago, Ill.); solar evaporation, pressed blocks from evaporated salt.
Salduro—R. K. Cobb (successor to Utah-Salduro Co., September, 1925) (address, 201 Second Avenue, Salt Lake City); solar evaporation.

VIRGINIA

Salt brine is produced in Virginia at Saltville, Smyth County, by the Mathieson Alkali Works (Inc.) for the manufacture of chemicals.

WEST VIRGINIA

The salt made in West Virginia is all obtained from natural brines. In 1925 the operators were as follows:

Kanawha County:
Belle—The Kanawha River Salt & Chemical Co. plant of the Pure Oil Co. is being dismantled, and the sales in 1925 were from stock.
Malden—J. Q. Dickinson & Co.; evaporated salt (open pans or grainers), also bromine and calcium chloride.
Mason County:
Hartford—Liverpool Salt & Coal Co.; evaporated salt (open pans or grainers), also bromine and calcium chloride.
Mason—Ohio River Salt Co.; evaporated salt (open pans or grainers), also bromine and calcium chloride.

BROMINE

In 1925 the bromine recovered from natural brines and sold or used by the producers decreased 23 per cent in quantity and 18 per cent in value compared with 1924, whereas the output in 1924 increased 141 per cent in quantity compared with 1923. The large increase of output in 1924 was due in part to the expected demand for bromine for making organic bromine compounds to be used in the manufacture of tetraethyl lead for use as an "antiknock" agent in gasoline. Objections to tetraethyl lead on account of alleged hazards of poisoning in its manufacture and use caused it to be taken from the market, and the abnormal demand for bromine ceased. Fears concerning the use of tetraethyl lead were dispelled later.

Anticipating a large demand for bromine and wishing to obtain it as cheaply as possible, E. I. du Pont de Nemours & Co., Wilmington, Del., conducted experiments on the recovery of bromine from sea water. For these experiments it used a specially equipped vessel, the steamship *Ethyl*. These experiments, although highly successful, were not of a commercial nature in 1925, but were undertaken to ascertain the practicability of the process employed and the probable yield. The bromine content of the material produced in these experiments has therefore not been taken into account in the compilation of statistics of bromine production for 1925.

A large part of the bromine output reported is not sold as bromine, but in the form of potassium and sodium bromide and other salts. The figures given in the table include the bromine content of these salts, and in 1925 were from plants operated by the Dow Chemical Co., Midland, Mich.; Pomeroy Salt Corporation (address, Pomeroy), Minersville, Ohio (production but no sales made); Brocalsa Chemical Co., Pomeroy and Syracuse, Ohio; J. Q. Dickinson & Co., Malden, W. Va.; Liverpool Salt & Coal Co., Hartford, W. Va.; and Ohio River Salt Co., Mason, W. Va.

Bromine sold by producers in the United States, 1916–1925

Year	Pounds	Value		Year	Pounds	Value	
		Total	Average			Total	Average
1916	728,520	$951,932	$1.31	1921	711,953	$172,759	$0.24
1917	895,499	492,703	.55	1922	1,005,174	150,668	.15
1918	1,727,156	970,099	.56	1923	842,352	146,176	.17
1919	1,854,971	1,234,969	.67	1924	2,033,804	594,685	.29
1920	1,160,584	745,381	.64	1925	1,566,120	488,406	.31

The values given in the foregoing table are reported to the Bureau of Mines by the producers, and represent receipts for the year f. o. b. at the plants.

The wholesale price per pound of bulk bromine as quoted in the New York market in 1925, according to Chemical and Metallurgical Engineering, was from 44 to 45 cents a pound in January and 47 to 48 cents a pound in February. In September and October it was 47 to 49 cents a pound, but in November and December it was 45 to 47 cents a pound.

Bromine had not been imported into the United States for several years before 1921, and the following table shows the importations since then:

Bromine imported for consumption in the United States, 1921–1925[1]

Year	Pounds	Value	Year	Pounds	Value
1921	300	$84	1924	37,318	$8,958
1922	1,094	339	1925	8,009	2,110
1923	782	1,171			

[1] No imports recorded for 1916 to 1920.

CALCIUM CHLORIDE

The calcium chloride reported in the following table is an original constituent of the natural brine produced in connection with the manufacture of salt or salt and bromine from mineral raw materials only. The calcium chloride reported includes an output of mixed calcium and magnesium chlorides and other salts. A further large output of calcium chloride made by manufacturing processes used in chemical industries is not reported. The production in 1925 was by the California Rock Salt Co. (address, Los Angeles), Saltus, Calif.; the Dow Chemical Co., Midland, Mich.; Saginaw Salt Products Co. and Saginaw Chemical Co., Saginaw, Mich.; Pomeroy Salt Corporation (address, Pomeroy, Ohio), Minersville, Ohio; Brocalsa Chemical Co., Syracuse, Ohio; J. Q. Dickinson & Co., Malden, W. Va.; Liverpool Salt & Coal Co., Hartford, W. Va.; and Ohio River Salt Co., Mason, W. Va.

Experimental work with a view to the manufacture of calcium chloride was done by the Saline Products Co. (address, Los Angeles) at Amboy, Calif.

Calcium (calcium-magnesium) chloride from natural brines sold by producers in the United States, 1916–1925

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1916	27,709	$224,997	$8.12	1921	23,672	$510,723	$21.57
1917	30,503	451,480	14.80	1922	33,067	571,326	17.28
1918	26,624	503,452	18.91	1923	44,961	663,384	14.75
1919	26,123	321,596	12.31	1924	58,791	1,164,848	19.81
1920	27,849	539,471	19.37	1925	67,870	1,386,639	20.43

Imports of calcium chloride were not separately recorded by the Bureau of Foreign and Domestic Commerce prior to the change in tariff September 22, 1922. The figures for imports since that time are shown in the following table:

Calcium chloride imported for consumption in the United States, September 22, 1922, to December 31, 1925

Year	Short tons	Value
1922 (Sept. 22 to Dec. 31)	740	$8,563
1923	3,232	48,527
1924	3,996	54,542
1925	2,253	37,121

BARITE AND BARIUM PRODUCTS[1]

By A. Stoll and R. M. Santmyers[2]

Sales of domestic crude barite, ground barite, lithopone, and barium chemicals by producers increased in 1925 over 1924. The greatest gains were made in lithopone and ground barite; combined sales of barium chemicals increased slightly.

CRUDE BARITE

SALES

Crude barite sold by producers in the United States, 1901–1925

Year	Short tons	Value f. o. b. at mine		Year	Short tons	Value f. o. b. at mine	
		Total	Average			Total	Average
1901–1915 (average)	56,061	$180,669	$3.22	1921	66,369	$531,958	$8.02
1916	221,952	1,011,232	4.56	1922	155,040	1,123,950	7.25
1917	206,888	1,171,184	5.66	1923	214,183	1,664,156	7.77
1918	155,368	1,044,905	6.73	1924	196,332	1,540,744	7.85
1919	209,330	1,727,822	8.25	1925	228,063	1,703,097	7.47
1920	228,113	2,142,464	9.39				

The expansion of the barite industry in 1925 is indicated in the preceding table, which shows sales amounting to 228,063 short tons, valued at $1,703,097—an increase of 16 per cent in quantity and of more than 10 per cent in value, as compared with 1924.

Sales in 1925 were only 50 tons less than in 1920—the year of greatest output—but the average value, based on all sales made by producers, was nearly $2 a ton less in 1925 than in 1920. This fact, coupled with the superior quality of ore demanded, marks 1925 as an advantageous year for buyers and users of crude barite.

BARITE INDUSTRY BY STATES

Crude barite sold by producers in the United States, 1924–25, by States

State	1924				1925			
	Short tons	Percentage of total	Value f. o. b. at mine		Short tons	Percentage of total	Value f. o. b. at mine	
			Total	Average			Total	Average
Georgia	71,776	37	$574,208	$8.00	65,936	29	$475,618	$7.21
Missouri	77,189	39	604,390	7.83	101,056	44	794,927	7.87
Tennessee	39,643	20	302,873	7.64	47,012	21	345,038	7.34
Other States [a]	7,724	4	59,273	7.67	14,059	6	87,514	6.22
	196,332	100	1,540,744	7.85	228,063	100	1,703,097	7.47

[a] 1924: Alabama, Nevada, North Carolina, South Carolina, Virginia, and Wisconsin; 1925: Arizona, Nevada, North Carolina, South Carolina, Virginia, and Wisconsin.

[1] A chapter on barytes and barium products that was accompanied by a map showing the location of barite deposits and barium-product manufactories was given in Mineral Resources for 1915.

[2] Figures on imports and exports compiled by J. A. Dorsey of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

No production was reported in Alabama in 1925, after 11 years of continuous shipments from that State.

An initial shipment of ore was reported from Cochise County, Ariz.

Development work in Inyo and Shasta Counties, Calif., gives promise of shipments in 1926. A small tonnage of ore was mined in Nevada County but none was sold.

An 8 per cent decrease in total sales of ore by producers in Georgia was shown in 1925, as compared with the preceding year. All ore mined came from Bartow County and was produced by five large companies.

No sales of ore from Idaho, Illinois, or Kentucky were reported by producers in 1925, although interest in the barite industry in these States has not ceased.

Sales of barite by producers in Missouri increased more than 30 per cent in 1925 as compared with 1924, and passed the 100,000 tons mark; they represent the highest output ever reported for the State, whose former record was 99,654 tons in 1920. Demand for ore was reported good throughout the year.

Barite was sold by producers from mines in Nevada from 1916 to 1920. None was produced from 1921 to 1923. In 1924 and 1925 Nevada again entered the list of producing States.

Barite has been produced continuously in North Carolina since 1901. Sales of ore in 1924 and 1925 were reported by only one producer and the quantity can not be published.

In South Carolina the mine near Kings Creek, Cherokee County, continued production during the year.

Sales of barite by producers in Tennessee reached their highest figure in 1925, exceeding the former record, made in 1924, by nearly 19 per cent. Nearly all of the production came from Monroe County.

Virginia, one of the earliest producers of barite, showed increased sales from mines in Campbell County, as compared with several preceding years.

Wisconsin reported a small output of barite from Lafayette County.

CONSUMPTION BY USES

The two tables that follow show the consumption of domestic and imported barite in the United States by uses. The figures were compiled from reports made by the manufacturers of barium products.

Crude barite (both domestic and imported) used in the manufacture of barium products in the United States, 1916–1925, in short tons

Year	In manufacture of—			Total	Year	In manufacture of—			Total
	Ground barite	Litho-pone	Barium chem-icals			Ground barite	Litho-pone	Barium chem-icals	
1916	75,507	71,898	38,283	185,688	1921	28,296	61,359	10,952	100,607
1917	60,132	86,065	49,842	196,039	1922	48,280	94,259	25,303	167,842
1918	62,440	85,282	38,041	185,763	1923	47,713	128,547	34,327	210,587
1919	64,922	103,688	32,976	201,586	1924	42,855	137,127	33,181	213,163
1920	79,052	113,181	37,210	229,443	1925	56,851	146,693	29,141	232,685

Domestic and imported crude barite used in the manufacture of barium products in the United States in 1925, by States

State	Product manufactured	Plants	Barite used
			Short tons
Illinois	Lithopone and chemicals	6	38,917
Missouri	Ground barite and chemicals	4	62,200
New Jersey	Lithopone and chemicals	5	73,460
Pennsylvania	Chemicals		
Delaware and Maryland	Lithopone	5	58,108
Georgia and South Carolina	Ground barite		
West Virginia	Chemicals		
		20	232,685

IMPORTS AND EXPORTS

The imports of crude barite, in large part from German sources, averaged more than 20,000 short tons annually for several years before the war. During the war they were negligible, but in recent years they have reached pre-war figures. Manufacturers of barium products in the Eastern States used a large percentage of the ore imported in 1925.

Crude barite imported for consumption in the United States, 1911–1925

Year	Short tons	Value [1]		Year	Short tons	Value [1]	
		Total	Average			Total	Average
1911–1915 (average)	21,833	$40,436	$1.85	1921	11,054	$59,371	$5.37
1916	17	245	14.41	1922	23,239	104,680	4.50
1917	6	63	10.50	1923	15,045	93,721	6.23
1918				1924	21,502	104,264	4.85
1919	118	594	5.03	1925	28,655	91,016	3.18
1920	24,874	146,858	5.90				

[1] Value at port of shipment, on which duty is levied. Does not include railroad and ship freight charges to this country or import duty.

Exports of barite are not separately classified by the Bureau of Foreign and Domestic Commerce.

WORLD'S PRODUCTION

The following table, prepared by L. M. Jones, of the Bureau of Mines, shows the output of barite by various countries from 1921 to 1925, so far as statistics are available:

World's production of barite, 1921–1925, in metric tons

Country	1921	1922	1923	1924	1925
Algeria	[1]	1,200	700	500	600
Australia:					
New South Wales	203		102	152	203
South Australia	1,289	1,908	1,789	1,928	2,040
Western Australia (exports)	2	19			
Austria	2,080	2,140	2,377	1,399	1,363
Belgium	17,050	1,480	6,770	20,490	[1]
Canada	245	262	371	137	86
France	11,297	12,634	26,061	[1]	[1]
Germany:					
Bavaria	23,439	16,139	19,970	23,029	21,477
Prussia	85,322	164,365	97,207	102,326	151,243
India (British)	1,718	2,430	2,611	2,340	[1]
Italy	13,500	21,300	27,592	39,568	32,195
Rhodesia, Southern			9	64	36
Spain	910	[2] 7,705	[2] 18,434	[2] 14,450	[2] 8,706
United Kingdom	25,065	41,606	44,195	55,646	[1]
United States	60,209	140,649	194,303	178,108	206,894

[1] Data not available.
[2] Includes the following quantities reported produced from quarries; 1922, 5,630 tons; 1923, 6,670 tons; 1924, 7,682 tons; 1925, 78 tons.

BARIUM PRODUCTS

Barium products made from domestic and imported crude ores in the United States and sold, 1924–25

Product	1924			1925		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Ground barite	38,296	$784,881	$20.50	49,674	$1,040,461	$20.95
Lithopone	109,469	12,531,397	114.47	145,019	15,186,147	104.72
Barium chemicals [1]	18,154	1,213,900	66.87	18,654	1,207,770	64.75
	165,919	14,530,178	87.57	213,347	17,434,378	81.72

[1] Barium chemicals manufactured from barium products bought in open market are not included in table in order to avoid duplication; the total output of barium chemicals is therefore not shown above.

The total quantity of barium products manufactured and sold in 1925 was 29 per cent larger than in 1924. The total value increased 20 per cent. The greatest growth was in the lithopone industry, which reported a gain of 32 per cent in sales; sales of ground barite increased 30 per cent and sales of the barium chemicals combined increased 3 per cent.

REFINED GROUND BARITE

Ground barite sold by producers in the United States, 1916–1925

Year	Number of plants	Short tons	Value	
			Total	Average
1916	9	65,440	$964,802	$14.74
1917	7	52,694	951,220	18.05
1918	9	55,086	1,041,608	18.91
1919	9	[1] 57,985	1,163,437	20.06
1920	8	65,748	1,381,868	21.02
1921	7	27,661	622,871	22.52
1922	7	46,176	933,722	20.22
1923	6	39,605	895,095	22.60
1924	5	38,296	784,881	20.50
1925	5	49,674	1,040,461	20.95

[1] Figures cover production, not sales.

Sales of ground barite by producers in 1925 increased 30 per cent over sales in 1924. The center of the industry is in Missouri, which produced nearly nine-tenths of the country's output in 1925. Other plants were active in Georgia and South Carolina. A plant for the manufacture of ground barite and barium chemicals is in process of construction at Modesto, Calif.; it should aid the development of barite deposits in California and adjacent States by affording a near-by market.

LITHOPONE

Lithopone sold by producers in the United States, 1916–1925

Year	Number of plants	Short tons	Value	
			Total	Average
1916	10	51,291	$5,798,927	$113.06
1917	13	63,713	7,406,896	116.25
1918	11	62,403	7,923,276	126.97
1919	15	78,365	10,218,850	130.40
1920	17	89,373	12,484,925	139.69
1921	15	55,016	6,681,563	121.45
1922	13	83,360	9,214,040	110.53
1923	11	98,199	11,608,443	118.21
1924	11	109,469	12,531,397	114.47
1925	11	145,019	15,186,147	104.72

The steady growth of the lithopone industry from an output of less than 5,000 tons in 1906 to more than 145,000 tons in 1925 is evidence of the commercial worth of lithopone. Constant study and improvements in preparation have greatly increased its usefulness and brought it to its present position.

An increase made in the capacity of the Chemical & Pigments Co.'s plant at St. Helena, Md., will enable it to double its output. The same company is constructing a new lithopone plant at Oakland, Calif., which will afford further market for native zinc.

Operation of the Argo, Ill., plant was transferred from the Midland Chemical Co. to the Eagle-Picher Lead Co., October 1, 1925.

BARIUM CHEMICALS

Barium chemicals sold by producers in the United States, 1924–25

Chemical	1924			1925		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Barium carbonate	6,058	$411,332	$67.90	4,962	$279,346	$56.30
Barium chloride	3,859	297,182	77.01	[1]	[1]	[1]
Barium sulphate (blanc fixe)	7,796	464,152	59.54	11,748	792,036	67.42
Other [2]	441	41,234	93.50	1,944	136,388	70.16
	18,154	1,213,900	66.87	18,654	1,207,770	64.75

[1] Included under "Other."
[2] 1924: Hydroxide and sulphide; 1925: Chloride, hydroxide, and sulphide.

Barium chemicals sold by producers in the United States, 1916–1925, in short tons

Year	Barium carbonate	Barium chloride	Barium sulphate (blanc fixe)	Other barium chemicals [1]	Year	Barium carbonate	Barium chloride	Barium sulphate (blanc fixe)	Other barium chemicals [1]
1916	6,844	3,643	3,337	2,968	1921	1,956	[3]	2,471	1,060
1917	8,238	4,870	6,314	3,081	1922	2,281	2,022	7,349	2,249
1918	7,661	4,530	9,522	1,473	1923	6,362	3,301	6,761	379
1919 [2]	7,135	4,509	5,227	3,142	1924	6,058	3,859	7,796	441
1920	7,484	3,084	8,046	2,146	1925	4,962	[3]	11,748	1,944

[1] 1916–1918 and 1920: Binoxide, hydroxide, nitrate, and sulphide; 1919: Binoxide, nitrate, and sulphide; 1921 and 1925: Chloride, hydroxide, and sulphide; 1922: Binoxide, hydroxide, sulphide, and sulphydrate; 1923–24: Hydroxide and sulphide.
[2] Figures cover production, not sales.
[3] Included under "Other barium chemicals."

Total sales by producers of barium chemicals produced from barite increased slightly in 1925, because of a gain of 51 per cent in the amount of barium sulphate (blanc fixe) marketed during the year.

The Basic Chemical Manufacturing Corporation, of Alton, Ill., was succeeded by the Alton Barium Products Co. in December, 1925.

The Titanium Pigment Co. discontinued operations at its barium sulphate plant at Niagara Falls, N. Y., and increased the manufacture of this chemical at its St. Louis plant.

IMPORTS AND EXPORTS

The quantities of barium products imported in 1925 compare with figures for 1924 as follows: Ground barite increased 13 per cent, lithopone decreased 7 per cent, and the barium chemicals increased 36 per cent.

Barium compounds imported for consumption in the United States, 1921–1925

[Value at port of shipment]

Year	Ground barite			Lithopone			Barium binoxide		
	Short tons	Value		Short tons	Value		Short tons	Value	
		Total	Average per ton		Total	Average per pound		Total	Average per pound
1921	1,002	$16,942	$16.91	5,247	$432,019	$0.041	669	$127,631	$0.095
1922	4,696	59,453	12.66	10,763	885,671	.041	1,009	189,334	.094
1923	6,022	88,741	14.74	10,440	776,383	.037	905	152,270	.084
1924	2,830	38,292	13.53	6,830	543,025	.040	860	120,374	.070
1925	3,203	40,008	12.49	6,330	478,395	.038	635	70,553	.056

Year	Blanc fixe (precipitated barium sulphate)			Artificial barium carbonate (chemically precipitated)			Natural barium carbonate (ground witherite)		
	Short tons	Value		Short tons	Value		Short tons	Value	
		Total	Average per pound		Total	Average per pound		Total	Average per pound
1921	769	$22,470	$0.015	2,238	$80,603	$0.018	668	$25,188	$0.019
1922	2,187	76,445	.017	5,212	210,250	.020	1,472	39,114	.013
1923	587	32,063	.027	1,901	79,482	.021	1,557	41,823	.013
1924	1,047	50,465	.024	3,752	128,217	.017	2,500	56,415	.011
1925	1,996	81,439	.020	7,188	160,164	.011	2,390	63,634	.013

Year	Barium chloride			Barium nitrate			Barium hydroxide		
	Short tons	Value		Short tons	Value		Short tons	Value	
		Total	Average per pound		Total	Average per pound		Total	Average per pound
1921	2,186	$72.621	$0.017	[1]			[1]		
1922	1,962	112,785	.029	[2] 179	$16,795	$0.047	[2] 73	$6,573	$0.045
1923	1,278	75,014	.029	511	59,766	.058	181	16,872	.047
1924	2,330	100,810	.022	513	54,638	.053	174	8,241	.024
1925	2,167	67,306	.016	703	58,192	.041	120	5,605	.023

[1] Not separately recorded prior to new tariff.
[2] Sept. 22 to Dec. 31; not separately recorded prior to new tariff.

The decrease in imports of lithopone was more than covered by an increase in the domestic production of that commodity.

Exports of lithopone, which were not separately recorded by the Bureau of Foreign and Domestic Commerce prior to 1922, were greater in 1925 than in 1924, but lower than in 1922 and 1923.

Lithopone exported from the United States, 1922–1925

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1922	1,616	$169,982	$105.19	1924	923	$104,783	$113.52
1923	1,485	176,624	118.94	1925	1,287	132,771	103.16

MARKETS AND PRICES

As indicated in the table on page 110, the largest consumption of barite is in the lithopone industry. Lithopone and other barium product plants center around New York and Philadelphia in the East and around Chicago and St. Louis in the Central States.

The eastern plants obtain their domestic barite from Georgia, North Carolina, South Carolina, and Tennessee. They also use some imported ore. Plants in the Central States obtain most of their raw material from the barite fields of Missouri. Several of the large producers of barium products work their own barite mines.

The accompanying table gives the range of quotations on barite and the barium products, 1923 to 1925. Quotations on crude and ground barite are taken from the Engineering and Mining Journal and represent prices in Missouri; quotations on lithopone and barium chemicals are taken from the Oil, Paint, and Drug Reporter and represent prices at New York.

Range of quotations on barite and barium products, 1923–1925

	Unit	1923	1924	1925
Crude barite	Short ton	$7.00 –$10.00	$8.00 –$9.00	$8.50
Ground barite	do	26.00 – 28.00	22.00 –26.00	$22.00 –23.00
Lithopone	Pound	.06¼– .07½	.06⅜– .08⅜	.06½– .06⅝
Barium carbonate	Short ton	66.00 – 90.00	63.00 –90.00	54.00 –65.00
Barium chlorate	Pound	.14 – .15	.14 – .15	.14 – .15
Barium chloride	Short ton	80.00 –100.00	70.00 –95.00	60.00 –72.50
Barium nitrate	Pound	.07½– .10¼	.08 – .10	.08 – .09
Barium sulphate (blanc fixe), dry	do	.04¼	.04 – .05	.04 – .05
Barium sulphate (blanc fixe), pulp	Short ton	40.00 – 60.00	50.00 –70.00	55.00 –70.00

The following are the designations on which quotations in the preceding table are based:

Crude barite, "f. o. b. mines."
Ground barite, "water ground and floated, bleached, f. o. b. works."
Lithopone, "in barrels, l. c. l."
Barium carbonate, "bags, works."
Barium chlorate, "kegs."
Barium chloride, "crystals, bags."
Barium nitrate, "casks."
Barium sulphate (blanc fixe), "dry, in barrels, l. c. l."
Barium sulphate (blanc fixe), "pulp, works."

PRODUCERS

Producers of barium products in the United States active in 1925 are listed below, with the addresses of their main offices and the locations of their plants.

Ground barite:	
Thompson, Weinman & Co., New York, N. Y	Cartersville, Ga.
C. P. DeLore Co., St. Louis, Mo	Mississippi River and River Des Peres, St. Louis, Mo.
National Pigments & Chemical Co., St. Louis, Mo	St. Louis, Mo.
Point Milling & Manufacturing Co., East St. Louis, Ill	Mineral Point, Mo.
Clinchfield Sand & Feldspar Co., Baltimore, Md	Kings Creek, S. C.
Lithopone:	
Krebs Pigment & Chemical Co., Newport, Del	Newport, Del.
Midland Chemical Co., Chicago, Ill.[1]	Argo, Ill.
Mineral Point Zinc Co., care New Jersey Zinc Co., New York, N. Y	Depue, Ill.
St. Louis Lithopone Co., St. Louis, Mo	Collinsville, Ill.
Sherwin-Williams Co., Cleveland, Ohio	Chicago, Ill.
Chemical & Pigments Co., care The Glidden Co., Cleveland, Ohio	St. Helena, Md.
E. I. du Pont de Nemours & Co., Wilmington, Del	Newark, N. J.
Do	Philadelphia, Pa.
Grasselli Chemical Co., Cleveland, Ohio	Grasselli, N. J.
United Color & Pigment Co., Newark, N. J	Newark, N. J.
New Jersey Zinc Co. (of Pennsylvania), New York, N. Y	Palmerton, Pa.
Barium chemicals:[2]	
Basic Chemical Manufacturing Corporation, Alton, Ill.[3]	Alton, Ill.
Chicago Copper & Chemical Co., Chicago, Ill	Blue Island, Ill.
Titanium Pigment Co. (Inc.), New York, N. Y	Carondelet Station, St. Louis, Mo.
E. I. du Pont de Nemours & Co., Wilmington, Del	Philadelphia, Pa.
Grasselli Chemical Co., Cleveland, Ohio	Grasselli, N. J.
Bertha Mineral Co., care New Jersey Zinc Co., New York, N. Y	Sweetwater, Tenn.
Barium Reduction Corporation, New York, N. Y	S. Charleston, W. Va.

[1] Succeeded by the Eagle-Picher Lead Co., October 1, 1925.
[2] Includes only those using barite.
[3] Succeeded by Alton Barium Products Co., December, 1925.

CLAY

By Jefferson Middleton[1]

GENERAL CONDITIONS

Clay available for the manufacture of clay products, the largest use, is widely distributed in the United States, and there are clay-working plants in every State. The tables of production that follow represent chiefly the clay that was mined and sold as clay, or mined under royalty or shipped into another State for fabrication, and do not include the clay that was burned into clay products by the producers themselves, unless it was mined under royalty or in a different State from that in which it was used. The quantity of clay thus sold is small compared with the total output and mainly includes clay used for making high-grade pottery and tile, paper, and refractory products. The values given for domestic production are f. o. b. mines or works; for imports, at the principal markets of the countries from which the clay was exported; for exports, at the port of shipment.

The domestic clay-mining industry continues to grow in importance, the sales of clay by producers increasing 9 per cent in 1925 compared with 1924. They were the largest recorded and were 71 per cent greater than those of 1915. The total value of these sales was also the largest recorded; it was 11 per cent greater than that of 1924 and 221 per cent greater than that of 10 years ago (1915). The increasing sales of domestic clays that are used in the higher grades of ceramic products, in the paper industry for coating and filling, and for other fillers, and which are largely supplied by foreign material, indicate the growing use of domestic clays in these industries and lead to the hope that possibly domestic manufacturers of these commodities may become independent of foreign supplies. In the refractories industry this condition has been nearly attained.

The sales of domestic kaolin, the chief clay used for high-grade wares, increased 12 per cent, whereas the imports of kaolin, or china clay, increased less than 6 per cent. The Southern States are the chief source of supply of kaolin, producing more than 75 per cent of the total output. Georgia is the largest producer, reporting 39 per

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

cent of the total sales for 1925. Federal and State agencies and private interests have done much research on Georgia clays and the almost unlimited supply of white clay in the State seems destined to have an important bearing on the ceramic and filler industries. Two publications on this subject have been issued recently by the Bureau of Mines.[2] Another development of importance in the utilization of Georgia kaolin was the establishment in 1925 at Gordon of an extensive plant for the manufacture of white face brick. Utilization of Georgia white clay in the refractories industry will probably also create a large demand for it.

Ball clay, which is principally used with kaolin in the bodies of high-grade ceramics, increased 32 per cent in quantity and 20 per cent in value as compared with 1924. The quantity and value reported for 1925 were the largest recorded.

Slip clay, a low-fusing material that formerly was used chiefly as a glaze on stoneware, now finds its main use as a binder in the manufacture of artificial abrasives. In 1925 the quantity of this material sold increased 24 per cent and the value increased 21 per cent as compared with 1924. The chief sources of supply of slip clay are Michigan and New York. A small quantity was reported from Tennessee in 1925.

Stoneware clay, the principal use of which is indicated by its name, increased 31 per cent in quantity and 38 per cent in value as compared with 1924. Notwithstanding such a large increase, the sales of this clay in 1925 were the smallest recorded except in 1919 and 1924. The term "stoneware clay" is used rather loosely, and much, if not all, of the fire and miscellaneous clays reported as having been sold for the manufacture of stoneware might properly be classed as stoneware clay.

Fire clay, which constituted about two-thirds of the total quantity of clay sold by producers in 1925, again made a record-breaking output, exceeding the war-time record of 1917 by 218,962 tons, or 9 per cent. The increase in 1925 over 1924 was 5 per cent in quantity and 9 per cent in value. The chief use of this clay, as its name indicates, is in the refractory industries. Considerable quantities are also used in the sanitary ware, stoneware, terra cotta, cement, plaster, and other industries.

Miscellaneous clays embrace those used in many industries, the larger part of the output being used in the manufacture of heavy clay products, such as building and drainage materials. Clay included under this head is also used for cosmetics, filtering oil (after treatment), flowerpots, insecticides, modeling, soap filler, softening water, taxidermy, and other purposes.

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[2] Weigel, W. M., Georgia and Alabama Clays and Fillers: Tech. Paper 343, Bureau of Mines, 1925, 34 pp.
Stull, R. T., and Bole, G. A., Beneficiation and Utilization of Georgia Clays: Bull. 252, Bureau of Mines, 1926, 72 pp.

PRODUCTION

Clay sold by producers in the United States, 1916–1925, by kinds

Year	Kaolin or china clay and paper clay		Ball clay		Slip clay		Fire clay	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1916	201,157	$1,075,730	89,761	$391,152	14,064	$47,939	2,057,814	$3,708,009
1917	206,334	1,263,799	107,406	569,240	16,972	70,505	2,347,972	5,625,095
1918	179,694	1,459,529	89,896	590,631	13,552	49,898	2,305,033	5,664,064
1919	152,828	1,475,681	65,026	520,849	5,149	17,556	1,755,331	4,628,605
1920	268,203	2,865,407	69,477	584,611	9,006	41,519	2,261,915	7,088,049
1921	162,726	1,579,163	54,014	354,565	4,608	14,841	1,195,861	3,560,373
1922	275,675	2,346,095	76,792	440,877	4,050	19,405	1,679,220	4,633,486
1923	336,803	2,926,255	97,068	620,978	8,520	43,609	2,298,163	6,565,899
1924	326,611	2,923,965	83,034	581,966	5,910	31,023	2,443,710	6,737,063
1925	367,319	3,220,719	109,607	699,427	7,349	37,397	2,566,934	7,312,349

Year	Stoneware clay		Brick clay		Miscellaneous clay		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1916	135,958	$137,779	97,164	$76,854	336,672	$314,311	2,932,590	$5,751,774
1917	81,352	113,839	93,779	94,703	260,029	305,365	3,113,844	8,042,546
1918	86,800	147,098	(1)	(1)	301,386	421,421	2,976,361	8,332,641
1919	60,236	80,367	(1)	(1)	236,530	367,573	2,275,100	7,090,631
1920	106,350	229,221	(1)	(1)	322,100	467,856	3,037,051	11,276,663
1921	86,574	184,540	(1)	(1)	242,963	361,818	1,746,746	6,055,300
1922	86,866	164,870	(1)	(1)	525,097	725,781	2,647,700	8,330,514
1923	81,389	194,358	(1)	(1)	612,717	837,814	3,434,660	11,188,913
1924	59,194	117,142	(1)	(1)	772,660	1,116,377	3,691,119	11,507,536
1925	77,438	162,161	(1)	(1)	901,773	1,304,579	4,030,420	12,736,632

[1] Included under "Miscellaneous clay."

Clay sold by producers in the United States in 1924, by States and kinds

State	Number of operators reporting sales	Kaolin or china clay and paper clay		Ball clay		Fire clay		Stoneware clay		Miscellaneous clay [1]		Total	
		Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama	12			100	$400	66,293	$101,924			20,546	$18,621	86,939	$120,945
Arkansas	(2)					166	1,570					166	1,570
California	27	2,267	$19,157	3,793	14,683	220,196	372,869			75,173	171,012	301,429	577,721
Colorado	18					185,259	257,038	686	$1,715	50,198	63,879	236,143	322,632
Connecticut	(2)					567	7,371			94	230	661	7,601
Delaware	3	(2)	(2)			(2)	(2)					5,710	66,254
Florida	4	(2)	(2)							(2)	(2)	50,247	692,657
Georgia	18	135,504	975,422			21,977	49,300	(2)	(2)	(2)	(2)	347,218	1,214,570
Idaho	(2)					570	5,550					570	5,550
Illinois	20			3,850	20,000	94,773	193,711	28,126	46,320	51,322	83,946	178,071	343,977
Indiana	13					51,927	85,131			50,315	37,031	102,242	122,162
Iowa	4									27,188	27,547	27,188	27,547
Kentucky	22			28,444	184,234	87,200	316,115					115,644	500,349
Maryland	15	2,050	3,362			30,414	107,991			53,878	54,578	86,342	165,931
Massachusetts	6					1,239	32,417			995	1,379	2,234	33,796
Michigan	5									9,332	14,041	9,332	14,041
Minnesota	(2)									21,545	34,705	21,545	34,705
Mississippi	3					(2)	(2)	(2)	(2)			2,195	7,619
Missouri	31			2,300	13,900	[3] 453,972	[3] 1,422,942	2,032	3,032	1,266	1,583	459,570	1,441,457
Montana	4					4,862	9,572			5,410	5,531	10,272	15,103
Nebraska	3					44	142			13,048	14,030	13,092	14,172
Nevada	3	1,084	10,611							2,276	25,195	3,360	35,806
New Jersey	42			5,366	37,040	268,401	1,234,718	8,053	31,046	70,914	183,228	352,734	1,486,032
New Mexico	5					3,596	13,603					3,596	13,603
New York	6					170	1,700			5,778	29,538	5,948	31,238
North Carolina	5	16,858	277,418					108	108			16,966	277,526
North Dakota	(2)	2	45			24	395					26	440
Ohio	60					249,094	552,476	14,290	18,568	2,958	5,859	266,342	576,903
Oregon	(2)					134	512					134	512
Pennsylvania	81	62,596	352,507			554,257	1,513,286	3,962	12,711	41,103	64,204	661,918	1,942,708
South Carolina	9	39,633	412,327			(2)	(2)	(2)	(2)			41,544	421,713
South Dakota	3									500	3,850	500	3,850
Tennessee	14			39,181	311,709	67,119	242,267			39,636	48,115	145,936	602,091
Texas	9					2,967	19,477	195	429	23	100	3,185	20,006
Utah	6					6,405	29,333			4,014	4,034	10,419	33,367
Vermont	(2)	333	3,651			50	175					383	3,826
Virginia	5	(2)	(2)			(2)	(2)			(2)	(2)	14,466	121,249
Washington	7					4,317	16,142			15,456	19,557	19,773	35,699
West Virginia	4					63,106	128,553					63,106	128,553
Wisconsin	(2)									257	883	257	883

Wyoming	3									23,716	41,172	23,716	41,172
Undistributed	12	66,284	869,465			4,611	20,783	1,742	3,213	191,629	193,552		
	482	326,611	2,923,965	83,034	581,966	[3] 2,443,710	[3] 6,737,063	59,194	117,142	[4] 778,570	[4] 1,147,400	3,691,119	11,507,530
Average value per ton			8.95		7.01		2.76		1.98				3.12

[1] Includes adobe, ardmorite, bentonite, black-burning clay, montmorillonite, and shale; clay for architectural terra cotta, asbestos products, building brick, cement, cosmetics, decolorizing oils, foundries, gas retorts, high-grade tile, hollow building tile, insecticides, modeling, molding, oilcloth, paint, paper filler, pencil leads, plaster and plaster products, pottery, roofing tile, sewer pipe, soap, taxidermy, tile (drain), water softener, and wads. Slip clay is also included in this column as a matter of statistical convenience.
[2] Included under "Undistributed."
[3] These totals include 9,252 tons of diaspore clay from Missouri, valued at $47,407.
[4] These totals include 5,910 tons of slip clay, valued at $31,023, or $5.25 per ton, from Michigan (308 tons, valued at $1,749) and New York (5,602 tons, valued at $29,274).

Clay sold by producers in the United States in 1925, by States and kinds

State	Number of operators reporting sales	Kaolin or china clay and paper clay		Ball clay		Fire clay		Stoneware clay		Miscellaneous clay [1]		Total	
		Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama	14					80,968	$143,622	74	$110	26,298	$25,579	107,340	$169,311
Arizona	[2]									[2]	[2]	[2]	[2]
Arkansas	4					[2]	[2]			[2]	[2]	623	2,634
California	31	2,735	$22,175	[2]	[2]	160,931	345,316	[2]	[2]	123,896	327,826	293,794	707,908
Colorado	18					187,266	279,046	558	1,395	66,697	78,246	254,521	358,687
Connecticut	3					[2]	[2]			[2]	[2]	416	6,503
Delaware	3	3,896	61,362			1,221	2,442			466	1,901	5,583	65,705
Florida	4	53,009	711,567									53,009	711,567
Georgia	17	141,956	1,040,064			26,413	52,568	[2]	[2]	[2]	[2]	330,063	1,255,166
Idaho	[2]					214	2,085					214	2,085
Illinois	19			[2]	[2]	132,274	255,605	34,955	48,757	[2]	[2]	218,264	384,199
Indiana	15					141,634	182,710			46,857	22,252	188,491	204,962
Iowa	3					[2]	[2]			[2]	[2]	2,813	3,539
Kentucky	19			31,453	$222,562	90,464	325,453					121,917	548,015
Maine	[2]					[2]	[2]			[2]	[2]	[2]	[2]
Maryland	14	[2]	[2]			29,102	103,116			[2]	[2]	91,032	168,606
Massachusetts	8					959	28,557			1,311	2,981	2,270	31,538
Michigan	4									3,953	7,405	3,953	7,405
Minnesota	[2]									[2]	[2]	[2]	[2]
Mississippi	3					[2]	[2]			[2]	[2]	2,229	11,090

[1] Includes ardmorite, bentonite, black-burning clay, halloysite, montmorillonite, and shale; clay for architectural terra cotta, asbestos products, blast furnaces, brick (building and paving), cement, fire brick and block, fire-clay mortar, fireworks, foundries, gas retorts, glasshouse pots, hollow building tile, modeling, paint and paper filler, pencil leads, plaster and plaster products, pottery, saggers, smelters, taxidermy, tile (high grade and drain), water softener, and zinc retorts. Slip clay is also included in this column as a matter of statistical convenience.
[2] Included under "Undistributed."

Clay sold by producers in the United States in 1925, by States and kinds—Continued

State	Number of operators reporting sales	Kaolin or china clay and paper clay		Ball clay		Fire clay		Stoneware clay		Miscellaneous clay		Total	
		Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Missouri	32	(2)	(2)	(2)	(2)	[3] 447, 062	[3] $1, 442, 456	(2)	(2)	(2)	(2)	453, 006	$1, 463, 880
Montana	5					4, 895	19, 668			8, 631	$8, 631	13, 526	28, 299
Nebraska	3					(2)	(2)			(2)	(2)	29, 169	30, 589
Nevada	3	(2)	(2)							(2)	(2)	1, 719	17, 695
New Jersey	44			5, 155	$30, 096	269, 660	1, 233, 502	15, 865	$69, 817	52, 523	85, 564	343, 203	1, 418, 979
New Mexico	4					4, 753	12, 657					4, 753	12, 657
New York	7					(2)	(2)			(2)	(2)	7, 503	47, 637
North Carolina	6	18, 799	$309, 833					(2)	(2)	(2)	(2)	18, 983	310, 683
North Dakota	(2)	2	26			27	286					29	312
Ohio	59					265, 857	721, 794	13, 798	18, 765	29, 454	20, 929	309, 109	761, 488
Oregon	(2)					(2)	(2)	(2)	(2)			(2)	(2)
Pennsylvania	93	66, 539	342, 385			602, 159	1, 740, 326	1, 787	5, 057	88, 860	130, 890	759, 345	2, 218, 658
South Carolina	9	52, 937	541, 222			(2)	(2)	(2)	(2)			55, 725	634, 278
South Dakota	3									1, 045	9, 680	1, 045	9, 680
Tennessee	15			66, 785	407, 504	28, 167	93, 620			115, 189	117, 068	210, 141	618, 192
Texas	11					3, 307	16, 691	(2)	(2)	(2)	(2)	4, 821	20, 247
Utah	8					7, 330	19, 151			7, 881	47, 831	15, 211	66, 982
Vermont	(2)	1, 733	9, 444									1, 733	9, 444
Virginia	4	(2)	(2)			1, 130	4, 291			(2)	(2)	20, 963	163, 857
Washington	7					3, 576	19, 418			20, 594	24, 227	24, 170	43, 645
West Virginia	5					68, 853	135, 751					68, 853	135, 751
Wisconsin	3									390	904	390	904
Wyoming	4					(2)	(2)			(2)	(2)	2, 584	63, 657
Undistributed	12	25, 713	182, 641	6, 214	39, 265	8, 712	132, 218	10, 401	18, 260	315, 077	430, 062	7, 907	20, 198
	516	367, 319	3, 220, 719	109, 607	699, 427	[3] 2, 566, 934	[3] 7, 312, 349	77, 438	162, 161	[4] 909, 122	[4] 1, 341, 976	4, 030, 420	12, 736, 632
Average value per ton			8. 77		6. 38		2. 85		2. 09				3. 16

[1] Included under "Undistributed."
[3] These totals include 15,177 tons of diaspore clay from Missouri, valued at $102,064.
[4] These totals include 7,349 tons of slip clay, valued at $37,397, or $5.09 per ton, from Michigan, New York, and Tennessee (of this New York reported 6,830 tons, valued at $34,943)

Forty-three States sold clay as such in 1925, an increase of two—Arizona and Maine—over 1924. The leading 10 States in order of quantity of clay sold were Pennsylvania (19 per cent of the total of the United States), Missouri (11 per cent), New Jersey (9 per cent), Georgia (8 per cent), Ohio (8 per cent), California (7 per cent), Colorado (6 per cent), Illinois (5 per cent), Tennessee (5 per cent), and Indiana (5 per cent). This is virtually the same rank in quantity as in 1924. In that year California was fifth and Ohio sixth. Kentucky, which was tenth in 1924, was eleventh in 1925. The first 10 States reported 83 per cent of the total and the first 5 reported nearly 55 per cent. In all of these States, except Georgia and Tennessee, fire clay is the leading kind reported and constituted from 55 per cent of the State total in California to 99 per cent in Missouri.

PRODUCTION BY USES

Statistics showing the production of clay by uses are necessarily incomplete, as many clay miners do not know the purpose to which their clay is put, but it is believed that the figures given in the following table are sufficiently complete to serve as a guide in the study of the uses of domestic clays. In considering these figures it should be borne in mind that they represent chiefly the clay sold as clay by the original producers and do not include the much greater quantities of clay that are burned into clay products by those who mine their own clay.

Clay sold by producers in the United States in 1925, by uses, in short tons

Use	Kaolin or china clay and paper clay	Ball clay	Slip clay	Fire clay (including fire-clay dust and clay for fire-clay mortar)	Stoneware clay	Miscellaneous clay	Total
White-bodied ware made from white-burning clays, including china, porcelain, general ware, chemical porcelain, porcelain electrical supplies, sanitary ware, etc	65,512	41,038	-------	15,401	-------	61	122,012
Art pottery	-------	3,728	-------	283	-------	1,062	5,068
High-grade tile	21,126	23,497	-------	20,469	-------	4,095	69,187
Chemical stoneware	-------	-------	-------	872	2,214	-------	3,086
Stoneware	898	-------	-------	16,447	60,117	-------	77,462
Enameling, as coating for granite ware, etc	30	1,169	249	-------	-------	-------	1,448
Paper filler	128,038	1,200	-------	200	-------	1,232	130,665
Paper coating	9,963	-------	-------	-------	-------	-------	9,963
Rubber	29,926	-------	-------	-------	-------	-------	29,926
Oilcloth or linoleum	7,976	-------	-------	-------	-------	-------	7,976
Paint filler or extender	11,889	-------	-------	-------	-------	60	11,949
Paint pigment	416	-------	-------	-------	-------	-------	416
Architectural terra cotta	-------	132	-------	38,763	14,800	10,156	63,851
Asbestos products	1,576	398	-------	2,032	-------	1,138	5,144
Plaster and plaster products	6,285	-------	-------	15,423	-------	4,139	25,857
Slip for glazing purposes	-------	-------	2,739	-------	-------	-------	2,739
Cement	50,607	-------	-------	35,731	-------	41,604	127,942
Kalsomine	4,278	-------	-------	925	-------	-------	5,203
Artificial abrasives	-------	591	4,361	1,116	-------	-------	6,068
Crayons (for tailors' use, etc.)	639	-------	-------	-------	-------	-------	639
Chemicals	155	-------	-------	-------	-------	-------	155
Saggers	6,187	22,314	-------	144,770	200	-------	173,471
Pins, stilts, and spurs for potters' use	-------	5,752	-------	4,720	-------	-------	10,472
Wads	-------	7,409	-------	27,032	-------	-------	34,441
Gas retorts	-------	-------	-------	4,849	-------	6	4,855
Fire brick and block	5,480	100	-------	802,906	-------	157	808,643
Fire-clay mortar, including clay processed for laying fire brick	3,118	-------	-------	399,609	-------	496	403,223
Glasshouse pots	-------	487	-------	43,410	-------	124	44,021

Clay sold by producers in the United States in 1925, by uses, in short tons—Con.

Use	Kaolin or china clay and paper clay	Ball clay	Slip clay	Fire clay (including fire clay dust and clay for fire-clay mortar)	Stoneware clay	Miscellaneous clay	Total
Glasshouse supplies, blocks, etc				8,140			8,140
Zinc retorts and condensers				58,924		100	59,024
Clay and graphite crucibles and stoppers		255		2,332			2,587
Foundry use and steel works for cupola lining, etc	3,000			480,729		32,069	515,798
Unspecified[1]	10,215	1,542		441,851	107	805,274	1,258,989
	367,319	109,607	7,349	2,566,934	77,438	901,773	4,030,420

[1] Includes clay for brick (building and paving), decolorizing oils, draintile, fireworks, flower pots, hollow building tile, modeling, pencil leads, records (phonographic), safety powder fuses, sewer pipe, taxidermy, and water softener; also black-burning clay.

IMPORTS AND EXPORTS

Clay imported for consumption in the United States, 1916–1925

Year	Kaolin or china clay			Common blue and Gross Allmerode glass-pot clay		All other clays				Total	
						Unwrought		Wrought			
	Short tons	Value		Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
		Total	Average								
1916	253,707	$1,326,684	$5.23	2,501	$12,134	42,478	$163,421	180	$1,994	298,866	$1,504,233
1917	241,029	1,315,769	5.46	88	709	26,581	123,439	338	2,142	268,036	1,442,059
1918	168,100	1,153,240	6.86	114	983	26,984	163,484	137	1,087	195,335	1,318,794
1919	180,592	1,965,393	10.88	4	133	23,759	187,550	498	4,262	204,853	2,157,338
1920	361,800	3,568,677	9.86	6,837	157,201	34,252	272,524	691	10,267	403,580	4,008,669
1921	162,906	1,546,285	9.49	4,468	77,217	41,421	348,870	120	2,313	208,915	1,974,685
1922	310,136	2,963,420	9.56	7,323	84,415	40,624	327,388	2,566	29,398	360,649	3,404,621
1923	311,298	3,046,191	9.79	12,999	121,272	65,379	481,614	1,676	21,892	391,352	3,670,969
1924	353,124	3,188,454	9.03	7,059	62,883	82,562	706,018	1,322	18,685	444,067	3,976,040
1925	372,552	3,195,694	8.58	11,889	107,940	49,991	499,325	2,383	29,266	436,815	3,832,225

Domestic clay exported from the United States, 1916–1925

Year	Fire clay		All other		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	45,752	$144,552	27,941	$145,970	73,693	$290,522
1917	54,023	268,093	29,194	178,764	83,217	446,857
1918	60,206	333,880	24,348	192,053	84,554	525,933
1919	37,486	262,501	30,983	249,571	68,469	512,072
1920	54,125	393,177	66,035	775,222	120,160	1,168,399
1921	23,666	177,979	23,779	183,449	47,445	361,428
1922	24,391	169,664	[1] 23,285	[1] 267,908	[1] 47,676	[1] 437,572
1923	50,055	303,675	34,840	329,192	84,895	632,867
1924	41,704	312,676	31,051	420,040	72,755	732,716
1925	44,037	350,571	39,006	530,995	83,043	881,566

[1] Includes 2,091 short tons of "kaolin, china and paper clay," valued at $27,840. Similar exports are not separately classified for other years.

Imports of clay in 1925 declined 2 per cent in quantity and 4 per cent in value as compared with 1924. The imports of kaolin, or china clay, which constituted 85 per cent of the total imports, increased 19,428 tons, or 6 per cent, as compared with 1924. The value in 1925 was virtually the same as that in 1924, the increase being only 0.2 per cent. The average value per ton of imported kaolin decreased 45 cents as compared with 1924 and was the lowest average value since 1918. The imports of high-grade refractory clay imported under common blue and Gross Almerode glass-pot clay increased considerably in quantity and value, but the imports of this clay are less than one-half of what they were at their maximum.

Exports of domestic clay in 1925 increased 14 per cent in quantity and 20 per cent in value as compared with 1924. Fire clay, which constituted 53 per cent of the total quantity of clay exported and 40 per cent of its value, increased 6 per cent in quantity and 12 per cent in value as compared with 1924. The exports of clay in 1925 compared with 1920, the year of greatest quantity and value, decreased 31 per cent in quantity and 25 per cent in value.

NATURAL GAS

By G. R. Hopkins [1]

According to the reports received from producers and distributers of natural gas, 1,188,571,000,000 cubic feet of natural gas were produced in the United States and delivered to consumers in 1925. Of this total 1,188,439,000,000 cubic feet were consumed in this country and the remainder was piped to Mexico and Canada. Although the total constitutes a record for gas production, it is an increase over 1924 of only 4 per cent, as compared to an average yearly increase for the past 10 years of 8 per cent. The value of this gas at the wells was $112,047,000 and at points of consumption $265,271,000, increases over 1924 of 6 and 4.5 per cent, respectively.

The relative rank of the chief gas-producing States was unchanged in 1925. Oklahoma, which ranks first, registered a 16 per cent gain in production; and Texas, which ranks fifth, a 26 per cent gain. California, West Virginia, and Louisiana, which ranked second, third, and fourth, respectively, showed slight declines in output.

The quantity of natural gas reported as treated for recovery of natural-gas gasoline in 1925 was 1,040,390,000,000 cubic feet, which is equivalent to 88 per cent of the total consumption of natural gas, and compares with 89 per cent in 1924 and 87 per cent in 1923.

In 1925 there were 3,536,000 domestic consumers of natural gas, or 92,600 more than in 1924. Ohio, which has 31 per cent of the total, and Kansas recorded the largest actual increases in number of domestic consumers. California reported a loss of nearly 30,000 domestic consumers in the vicinity of Los Angeles. The total consumption of natural gas by domestic users was 272,146,000,000 cubic feet, valued at $152,494,000, or 56 cents per thousand. This represents an increase over 1924 in the price paid by the domestic consumers but a decrease in the total gas used. This decrease, in the face of the larger number of users, indicates either better utilization of the gas available or the displacement by other fuels as a result of higher prices. Interstate transportation of natural gas, which is carried on mainly for domestic consumption, increased in 1925. The major interstate movement continued to be from West Virginia to Ohio. Nearly two-thirds of the natural gas consumed in Ohio comes from West Virginia, and the great spread in price between the well in West Virginia and the home in Ohio is undoubtedly due to the distance the gas is transported.

[1] Figures compiled by H. Backus, of the Bureau of Mines.

The total consumption of natural gas (including residue gas from natural-gas gasoline plants) by industrial users in 1925 was 916,293,000,000 cubic feet, equivalent to 77 per cent of the total consumption. Of this total 423,524,000,000 cubic feet was used for field purposes and 492,769,000,000 cubic feet for other industrial uses, including the manufacture of carbon black. Oklahoma continued its rank as the leading user of natural gas for field purposes, that is, for drilling, pumping, and operating natural-gas gasoline recovery plants. Louisiana continued as the chief consumer of natural gas for "other industrial" purposes, and the bulk of the consumption for those purposes in Louisiana was by plants making carbon black.

Summary of statistics for natural gas in the United States, 1921–1925

	1921	1922	1923	1924	1925
Natural gas consumed:					
Domestic—millions of cubic feet	248,334	254,413	277,050	285,152	272,146
Industrial—					
Carbon black—do	50,565	53,629	109,096	156,514	140,366
Field—do	182,305	197,850	343,076	393,437	423,524
Other industrial—do	180,848	256,654	277,745	306,379	352,403
	662,052	762,546	1,006,967	1,141,482	1,188,439
Domestic—per cent	37.5	33.4	27.5	25	23
Industrial—do	62.5	66.6	72.5	75	77
Treated for natural-gas gasoline:					
Millions of cubic feet	465,097	545,139	875,711	1,016,276	1,040,390
Per cent of total consumption	70.3	71.5	87.0	89	88
Domestic consumers—thousands	2,631	3,015	3,234	3,443	3,536
Value of natural gas at wells:					
Total—thousands of dollars	(1)	84,873	100,849	105,779	112,047
Average per M cubic feet—cents	(1)	11.1	10.0	9.3	9.4
Value of natural gas at points of consumption:					
Total—thousands of dollars	174,617	221,535	239,995	253,830	265,184
Domestic—do	110,337	126,902	142,317	154,075	152,494
Industrial—do	64,280	94,633	97,678	99,755	112,690
Average per M cubic feet—					
Domestic—cents	44.4	49.9	51.4	54.0	56.0
Industrial—do	15.5	18.6	13.4	11.6	12.3
Domestic and industrial—do	26.4	29.1	23.8	22.2	22.3
Natural-gas gasoline (raw):					
Quantity—thousands of gallons	449,934	505,832	816,226	933,861	1,127,470
Value at plants—					
Total—thousands of dollars	61,815	72,711	77,268	82,233	120,383
Average per gallon—cents	13.7	14.4	9.5	8.8	10.7
Carbon black:					
Quantity—thousands of pounds	59,766	67,795	138,263	186,872	177,417
Value at plants—					
Total—thousands of dollars	5,446	5,820	11,692	11,565	9,640
Average per pound—cents	9.1	8.6	8.5	6.2	5.4

[1] Figures not available.

Natural gas produced and consumed in the United States, 1924–25

State	Produced and delivered to consumers, including deliveries in other States						Consumed, including receipts from other States			
	Quantity		Estimated value at the wells		Value at points of consumption		Quantity		Value at points of consumption	
	M cubic feet	Per cent of total	Total	Average per M cubic feet (cents)	Total	Average per M cubic feet (cents)	M cubic feet	Per cent of total	Total	Average per M cubic feet (cents)
1924										
Ark	36,616,000	3.2	$1,747,000	4.8	$4,908,000	13.4	44,595,000	3.9	$5,977,000	13.4
Calif	189,692,000	16.6	14,227,000	7.5	35,949,000	19.0	189,692,000	16.6	35,949,000	19.0
Colo	47,600	(1)	1,700	3.6	1,700	3.6	47,600	(1)	1,700	3.6
Ill	4,072,000	.4	635,000	15.6	759,000	18.6	4,072,000	.4	759,000	18.6
Ind	998,000	.1	357,190	35.8	494,000	49.5	2,377,000	.2	1,278,000	53.8
Kans	25,580,000	2.2	2,128,000	8.3	10,087,000	39.4	40,528,000	3.5	11,074,000	27.3
Ky	12,875,000	1.1	1,147,000	8.9	3,432,000	26.7	21,514,000	1.9	5,841,000	27.1
La	160,945,000	14.1	5,021,000	3.1	7,626,000	4.7	163,469,000	14.3	6,858,000	4.2
Md							679,000	.1	496,000	73.0
Mich	600	(1)	55	9.2	300	50.0	600	(1)	300	50.0
Mo	71,000	(1)	6,525	9.2	61,000	85.9	5,394,000	.5	4,617,000	85.6
Mont	1,071,000	.1	34,380	3.2	272,350	25.4	2,228,000	.2	566,350	25.4
N. Y	[2] 6,196,000	.5	1,853,000	29.9	3,632,000	58.6	16,506,000	1.4	9,685,000	58.7
Ohio	47,396,000	4.2	8,351,000	17.6	24,203,000	51.1	111,353,000	9.8	57,550,000	51.7
Okla	214,452,000	18.8	14,926,000	7.0	31,045,700	14.5	183,451,000	16.1	24,016,700	13.1
Pa	105,863,000	9.3	25,037,000	23.7	45,546,000	43.0	123,932,000	10.9	52,005,000	42.0
S. Dak	3,000	(1)	275	9.2	2,500	83.3	3,000	(1)	2,500	83.3
Tenn	1,200	(1)	110	9.2	450	37.5	1,200	(1)	450	37.5
Tex	[3] 107,247,000	9.4	4,065,000	3.8	13,748,000	12.8	107,447,000	9.4	14,914,000	13.9
W. Va	182,285,000	16.0	24,536,000	13.5	68,000,000	37.3	79,240,000	6.9	18,445,000	23.3
Wyo	46,036,000	4.0	1,699,000	3.7	4,081,000	8.9	44,879,000	3.9	3,787,000	8.4
Other [4]	73,600	(1)	6,765	9.2	7,000	9.5	73,600	(1)	7,000	9.5
	1,141,521,000	100.0	105,779,000	9.3	253,856,000	22.2	1,141,482,000	100.0	253,830,000	22.2
1925										
Ark	41,878,000	3.5	2,504,000	6.0	5,394,000	12.9	51,543,000	4.3	6,639,000	12.9
Calif	187,789,000	15.8	14,084,000	7.5	32,587,000	17.4	187,789,000	15.8	32,587,000	17.4
Colo	574,400	.1	61,000	10.6	61,100	10.6	574,400	.1	61,100	10.6
Ill	4,165,000	.4	748,000	18.0	865,000	20.8	4,165,000	.4	865,000	20.8
Ind	1,168,000	.1	424,000	36.3	504,000	43.2	1,786,000	.2	863,000	48.3
Kans	26,917,000	2.3	2,213,000	8.2	9,991,000	37.1	48,684,000	4.1	12,019,000	24.7
Ky	10,770,000	.9	1,037,000	9.6	3,213,000	29.8	18,601,000	1.6	5,726,000	30.8
La	152,620,000	12.8	4,670,000	3.1	8,125,000	5.3	148,000,000	12.4	6,515,000	4.4
Mich	400	(1)	40	10.0	200	50.0	400	(1)	200	50.0
Mo	34,000	(1)	3,100	9.1	29,700	87.4	5,372,000	.5	4,710,700	87.7
Mont	1,496,000	.1	55,000	3.7	350,000	23.4	2,608,000	.2	610,000	23.4
N. Y	[5] 6,210,000	.5	1,863,000	30.0	3,778,000	60.8	16,503,000	1.4	10,051,000	60.9
Ohio	43,235,000	3.6	7,752,000	17.9	22,377,000	51.8	111,969,000	9.4	58,635,000	52.4
Okla	249,285,000	21.0	18,447,000	7.4	36,121,000	14.5	209,458,000	17.6	27,464,000	13.1
Pa	101,632,000	8.6	24,392,000	24.0	47,098,000	46.3	119,475,000	10.0	53,946,000	45.2
S. Dak	4,200	(1)	400	9.5	2,300	54.8	4,200	(1)	2,300	54.8
Tenn	8,500	(1)	800	9.4	2,000	23.5	8,500	(1)	2,000	23.5
Tex	[6] 134,872,000	11.3	7,040,000	5.2	19,715,000	14.6	142,485,000	12.0	21,982,000	15.4
W. Va	180,345,000	15.2	24,851,000	13.8	70,903,000	39.3	74,250,000	6.2	18,122,000	24.4
Wyo	45,539,000	3.8	1,899,000	4.2	4,149,000	9.1	44,427,000	3.7	3,889,000	8.8
Other [4]	28,500	(1)	2,660	9.3	5,700	20.0	736,500	.1	494,700	67.2
	1,188,571,000	100.0	112,047,000	9.4	265,271,000	22.3	1,188,439,000	100.0	265,184,000	22.3

[1] Less than 0.1 per cent.
[2] Includes 12,000 M cubic feet consumed in Canada.
[3] Includes 27,000 M cubic feet consumed in Mexico.
[4] 1924: Alaska, Iowa, and North Dakota; 1925: Alaska, Iowa, Maryland, New Mexico, and North Dakota.
[5] Includes 68,000 M cubic feet consumed in Canada.
[6] Includes 64,000 M cubic feet consumed in Mexico.

Interstate transportation of natural gas, 1924–25, in thousands of cubic feet

State in which gas was produced	State to which gas was transported	1924	1925
Indiana	Kentucky	157,000	346,000
Kansas	Missouri	5,323,000	5,338,000
	Oklahoma	34,000	167,000
		5,357,000	5,505,000
Kentucky	West Virginia	1,678,000	1,603,000
Louisiana	Arkansas	6,908,000	8,370,000
	Texas	2,453,000	6,321,000
		9,361,000	14,691,000
New York	Canada	12,000	68,000
	Pennsylvania	24,000	28,000
		36,000	96,000
Ohio	Indiana	1,536,000	964,000
	West Virginia	1,149,000	824,000
		2,685,000	1,788,000
Oklahoma	Arkansas	705,000	549,000
	Kansas	20,305,000	27,272,000
	Texas	10,025,000	12,173,000
		31,035,000	39,994,000
Pennsylvania	Ohio	85,000	166,000
	New York	10,346,000	10,389,000
	West Virginia	3,289,000	2,122,000
		13,720,000	12,677,000
Texas	Arkansas	366,000	746,000
	Louisiana	11,885,000	10,071,000
	Mexico	27,000	64,000
		12,278,000	10,881,000
West Virginia	Kentucky	10,160,000	9,088,000
	Maryland	679,000	708,000
	Ohio	66,557,000	70,356,000
	Pennsylvania	31,765,000	30,492,000
		109,161,000	110,644,000
Wyoming	Montana	1,157,000	1,112,000
		186,625,000	199,337,000

State	Domestic				Industrial							
					Field (drilling, pumping, and operating gasoline recovery plants)		Other industrial, including use in manufacture of carbon black			Total industrial		
	Number of consumers	M cubic feet	Value at points of consumption		M cubic feet (estimated)	Value at points of consumption (estimated)	M cubic feet	Value at points of consumption		M cubic feet	Value at points of consumption	
			Total	Average (cents)				Total	Average (cents)		Total	Average (cents)
1924												
Arkansas	44,930	6,346,000	$2,744,000	43.2	28,180,000	$1,344,000	10,069,000	$1,889,000	18.8	38,249,000	$3,233,000	8.5
California	591,010	22,480,000	16,619,000	73.9	108,660,000	8,150,000	58,552,000	11,180,000	19.1	167,212,000	19,330,000	11.6
Colorado	9	900	500	55.6			46,700	1,200	2.6	46,700	1,200	2.6
Illinois	10,610	260,000	164,000	63.1	3,812,000	595,000				3,812,000	595,000	15.6
Indiana	25,980	1,194,000	729,000	61.1	84,600	30,000	1,098,400	519,000	47.3	1,183,000	549,000	46.4
Kansas	135,420	9,876,000	6,362,000	64.4	5,911,000	492,000	24,741,000	4,220,000	17.1	30,652,000	4,712,000	15.4
Kentucky	129,140	11,230,000	4,590,000	40.9	1,002,000	89,000	9,282,000	1,162,000	12.5	10,284,000	1,251,000	12.2
Louisiana	30,430	4,523,000	1,404,000	31.0	18,073,000	564,000	140,873,000	4,890,000	3.5	158,946,000	5,454,000	3.4
Maryland	11,710	602,000	455,000	75.6			77,000	41,000	53.2	77,000	41,000	53.2
Michigan	7	600	300	50.0								
Missouri	93,032	4,860,000	4,431,000	91.2			534,000	186,000	34.8	534,000	186,000	34.8
Montana	5,640	1,319,000	540,300	41.0	239,000	7,650	670,000	18,400	2.7	909,000	26,050	2.9
New York	213,790	15,964,000	9,471,000	59.3	306,000	91,000	236,000	123,000	52.1	542,000	214,000	39.5
Ohio	1,065,860	88,269,000	48,301,000	54.7	4,752,000	838,000	18,332,000	8,411,000	45.9	23,084,000	9,249,000	40.1
Oklahoma	150,170	17,184,000	9,115,700	53.0	118,774,000	8,266,600	47,493,000	6,631,400	14.0	166,267,000	14,901,000	9.0
Pennsylvania	568,200	58,896,000	31,732,000	53.9	9,494,000	2,245,000	55,542,000	18,028,000	32.5	65,036,000	20,273,000	31.2
South Dakota	52	3,000	2,500	83.3								
Tennessee	32	800	400	50.0	400	50				400	50	12.5
Texas	196,560	14,708,000	9,067,000	61.6	61,155,000	2,318,000	31,584,000	3,529,000	11.2	92,739,000	5,847,000	6.3
West Virginia	160,210	24,943,000	7,381,000	29.6	12,962,000	1,745,000	41,335,000	9,319,000	22.5	54,297,000	11,064,000	20.4
Wyoming	10,603	2,492,100	965,000	38.7	19,959,000	737,000	22,427,900	2,085,000	9.3	42,386,900	2,822,000	6.7
Other [1]	5	600	300	50.0	73,000	6,700				73,000	6,700	9.2
	3,443,400	285,152,000	154,075,000	54.0	393,437,000	27,519,000	462,893,000	72,236,000	15.6	856,330,000	99,755,000	11.6

[1] Alaska, Iowa, and North Dakota.

Natural gas consumed in the United States, 1924–25—Continued

State	Domestic				Industrial							
			Value at points of consumption		Field (drilling, pumping, and operating gasoline recovery plants)		Other industrial, including use in manufacture of carbon black			Total industrial		
	Number of consumers	M cubic feet	Total	Average (cents)	M cubic feet (estimated)	Value at points of consumption (estimated)	M cubic feet	Value at points of consumption		M cubic feet	Value at points of consumption	
								Total	Average (cents)		Total	Average (cents)
1925												
Arkansas	47,360	6,146,000	$2,753,000	44.8	36,103,000	$2,159,000	9,294,000	$1,727,000	18.6	45,397,000	$3,886,000	8.6
California	561,710	18,684,000	13,572,000	72.6	109,333,000	8,200,000	59,772,000	10,815,000	18.1	169,105,000	19,015,000	11.2
Colorado	9	900	500	55.6	547,000	60,000	26,500	600	2.3	573,500	60,600	10.6
Illinois	11,700	250,000	162,000	64.8	3,915,000	703,000				3,915,000	703,000	18.0
Indiana	16,480	747,000	370,000	49.5	31,000	11,000	1,008,000	482,000	47.8	1,039,000	493,000	47.4
Kansas	168,790	9,647,000	6,301,000	65.3	10,263,000	844,000	28,774,000	4,874,000	16.9	39,037,000	5,718,000	14.6
Kentucky	130,780	11,185,000	4,605,000	41.2	797,000	77,000	6,619,000	1,044,000	15.8	7,416,000	1,121,000	15.1
Louisiana	35,680	5,219,000	1,583,000	30.3	18,085,000	553,000	124,696,000	4,379,000	3.5	142,781,000	4,932,000	3.5
Michigan	5	400	200	50.0								
Missouri	100,120	4,846,000	4,557,700	94.1			526,000	153,000	29.1	526,000	153,000	29.1
Montana	5,705	1,303,000	574,000	44.1	254,000	9,000	1,051,000	27,000	2.6	1,305,000	36,000	2.8
New York	222,750	16,055,000	9,872,000	61.5	254,000	76,000	194,000	103,000	53.1	448,000	179,000	40.0
Ohio	1,094,120	83,722,000	46,848,000	56.0	4,148,000	744,000	24,099,000	11,043,000	45.8	28,247,000	11,787,000	41.7
Oklahoma	155,780	16,592,000	8,814,000	53.1	137,444,000	10,171,000	55,422,000	8,479,000	15.3	192,866,000	18,650,000	9.7
Pennsylvania	582,520	55,797,000	33,500,000	60.0	7,845,000	1,883,000	55,833,000	18,563,000	33.2	63,678,000	20,446,000	32.1
South Dakota	53	4,200	2,300	54.8								
Tennessee	48	8,500	2,000	23.5								
Texas	212,240	15,179,000	9,888,000	65.1	61,819,000	3,227,000	65,487,000	8,867,000	13.5	127,306,000	12,094,000	9.5
West Virginia	167,070	23,984,000	7,739,000	32.3	12,404,000	1,709,000	37,862,000	8,674,000	22.9	50,266,000	10,383,000	20.7
Wyoming	10,710	2,169,000	927,000	42.7	20,261,000	845,000	21,997,000	2,117,000	9.6	42,258,000	2,962,000	7.0
Other [1]	12,370	607,000	423,300	69.7	21,000	2,000	108,500	69,400	64.0	129,500	71,400	55.1
	3,536,000	272,146,000	152,494,000	56.0	423,524,000	31,273,000	492,769,000	81,417,000	16.5	916,293,000	112,690,000	12.3

[1] Alaska, Iowa, Maryland, New Mexico, and North Dakota.

Year	Produced and delivered to consumers (billions of cubic feet)	Treated for recovery of natural-gas gasoline		Domestic consumption				Industrial consumption					
		Billions of cubic feet	Per cent of total consumption	Number of consumers (thousands)	Billions of cubic feet	Per cent of total consumption	Average value at points of consumption per M cubic feet (cents)	Field (billions of cubic feet)	Carbon black (billions of cubic feet)	Other industrial (billions of cubic feet)	Total industrial (billions of cubic feet)	Per cent of total consumption	Average value at points of consumption per M cubic feet (cents)
1914	592	17	3	2,078	203	34	28.0	[1]	[1]	[1]	389	66	9.6
1915	629	24	4	2,195	217	35	28.3	[1]	[1]	[1]	412	65	9.7
1916	753	209	28	2,362	235	31	28.6	[1]	[1]	[1]	518	69	10.2
1917	795	429	54	2,431	258	32	30.8	[1]	[1]	[1]	537	68	11.7
1918	721	449	62	2,509	271	38	31.4	[1]	[1]	[1]	450	62	15.2
1919	746	480	64	2,501	256	34	34.6	170	50	270	490	66	14.8
1920	798	496	62	2,615	286	36	38.2	202	41	269	512	64	17.0
1921	662	465	70	2,631	248	38	44.4	182	51	181	414	62	15.5
1922	763	545	71	3,015	255	33	49.9	198	54	256	508	67	18.6
1923	1,007	876	87	3,234	277	28	51.4	343	109	278	730	72	13.4
1924	[2] 1,142	1,016	89	3,443	285	25	54.0	393	157	306	856	75	11.6
1925	[2] 1,189	1,040	88	3,536	272	23	56.0	424	140	352	916	77	12.3

[1] Figures not available.
[2] Includes gas piped to Canada and Mexico; see p. 129.

Natural gas produced in the United States and delivered to consumers, 1914–1925, by States, in millions of cubic feet

Year	Arkansas	California	Illinois	Indiana	Kansas	Kentucky	Louisiana	Montana	New York	Ohio	Oklahoma	Pennsylvania	Texas	West Virginia	Wyoming	Others	Total	Value at points of consumption	
																		Total (thousands of dollars)	Average per M cubic feet (cents)
1914	[1] 963	17,829	3,548	2,580	22,628	1,422	[2] 26,775	-------	8,935	68,270	78,167	110,745	13,434	236,489	(1)	82	591,867	94,116	15.9
1915	[1] 992	21,891	2,690	2,261	27,046	1,667	25,540	6	7,977	79,510	87,517	113,692	13,324	244,004	[4] 342	120	628,579	101,312	16.1
1916	2,388	31,643	3,534	1,715	31,710	2,107	32,081	213	8,036	69,888	123,517	130,484	15,810	299,319	[4] 575	150	753,170	120,227	16.0
1917	5,610	49,427	4,439	1,712	24,439	2,802	31,287	334	8,372	68,917	137,384	133,397	17,047	308,617	[4] 1,223	103	795,110	142,089	17.9
1918	5,295	39,719	4,473	1,667	27,825	3,022	36,094	177	8,461	61,261	124,317	123,813	13,440	265,161	4,339	1,937	721,001	153,554	21.3
1919	5,587	55,607	3,825	1,407	16,150	2,057	47,062	858	8,124	63,153	163,649	113,489	24,710	234,095	6,014	129	745,916	160,888	21.6
1920	9,027	66,041	3,013	1,779	21,158	3,345	58,274	818	8,419	58,938	154,467	125,787	37,063	239,719	10,312	50	798,210	196,194	24.6
1921	4,260	75,942	2,646	1,066	15,717	4,820	58,004	336	6,583	47,412	124,058	86,144	44,504	174,921	15,608	31	662,052	174,617	26.4
1922	9,700	84,580	3,383	947	20,289	5,872	70,267	486	6,947	51,481	140,631	101,276	47,945	195,288	23,427	27	762,546	221,535	29.1
1923	24,215	131,434	4,049	880	30,913	11,953	112,031	1,470	6,497	53,812	203,082	112,562	74,535	203,867	35,523	153	1,006,976	240,001	23.8
1924	36,616	189,692	4,072	998	25,580	12,875	160,945	1,071	6,196	47,396	214,452	105,863	107,247	182,285	46,036	197	1,141,521	253,856	22.2
1925	41,878	187,789	4,165	1,168	26,917	10,770	152,620	1,496	6,210	43,235	249,285	101,632	134,872	180,345	45,539	650	1,188,571	265,271	22.3

[1] Colorado and Wyoming included with Arkansas.
[2] Alabama included with Louisiana.
[3] Includes gas piped from Oklahoma and consumed in Arkansas.
[4] Includes Colorado.

LIME

By A. T. Coons[1]

GENERAL CONDITIONS

Sales of lime by producers in the United States in 1925 increased 12 per cent in quantity and 8 per cent in value over 1924. The greatest gain was in sales of lime for agricultural use, which increased 20 per cent in quantity. Lime for construction increased 10 per cent and chemical lime 15 per cent in quantity. Maine was the only producing State of importance to show a definite decrease (8 per cent) in quantity of lime sold. Sales in Connecticut decreased slightly. Other decreases were in States where the output was small and of local importance only. Ohio, the largest producing State, increased 17 per cent in 1925, following an increase of 8 per cent in 1924, and Pennsylvania, the second State, increased 14 per cent in 1925, following a decrease of 9 per cent the preceding year. The total number of plants that reported operation was the same as in 1924. Labor conditions at the plants seemingly changed little during 1925, and wages and cost of materials were about the same as during 1924. There was a tendency toward lower prices, and the average value, at the plants, of lime sold decreased from $9.72 to $9.30 a ton.

Competition among the chief producers is close, and successful production depends so largely upon the economical operation of plants that in recent years much consideration has been given to their equipment and to the study of conditions under which operations can be carried on most advantageously in kilns and quarries.

The accompanying tables do not include a considerable amount of lime which is not a commercial product but is burned, for use in manufacturing, from stone either quarried or purchased by the manufacturer. This stone is reported to the bureau as raw limestone and is included in the statistics on stone. It is used mainly by alkali works, carbide works, sugar refineries, and smelters.

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

PRODUCTION

Lime sold by producers in the United States, 1916–1925

Year	Number of plants in operation	Short tons	Value [1]	
			Total	Average
1916	778	4,073,433	$18,509,305	$4.54
1917	595	3,786,364	23,807,877	6.29
1918	496	3,206,016	26,808,909	8.36
1919	539	3,330,347	29,448,553	8.84
1920	515	3,579,141	37,543,840	10.52
1921	520	2,532,153	24,895,370	9.83
1922	530	3,639,617	33,255,039	9.14
1923	467	4,076,243	39,993,652	9.81
1924	[2] 450	4,072,000	39,596,423	9.72
1925	450	4,580,823	42,609,141	9.30

[1] The value given represents the value of bulk lime f. o. b. at point of shipment and does not include cost of barrel or package.
[2] Revised figures.

Lime sold by producers in the United States, 1924–25, by States

State	1924			1925		
	Number of plants in operation	Short tons	Value	Number of plants in operation	Short tons	Value
Alabama	10	204,059	$1,812,282	11	207,699	$1,679,155
Arizona	3	27,972	331,756	3	39,045	394,023
Arkansas	3	13,984	131,108	5	24,791	223,965
California	10	59,583	658,138	10	70,805	745,132
Colorado	4	(1)	(1)	3	(1)	(1)
Connecticut	6	58,851	796,541	6	58,449	672,821
Florida	2	(1)	(1)	3	17,793	186,650
Georgia	1	(1)	(1)	1	(1)	(1)
Hawaii	1	(1)	(1)	1	(1)	(1)
Idaho	1	(1)	(1)	1	(1)	(1)
Illinois	10	89,132	934,199	10	96,066	928,632
Indiana	7	116,927	991,003	7	127,878	1,067,040
Iowa	2	(1)	(1)	2	(1)	(1)
Kentucky	3	8,091	58,228	3	9,433	71,300
Maine	4	125,688	1,809,929	4	115,571	1,291,812
Maryland	11	56,178	470,105	12	64,518	524,100
Massachusetts	11	194,402	2,693,028	9	197,732	2,610,279
Michigan	7	73,096	702,072	8	95,036	909,952
Minnesota	4	25,764	319,066	3	(1)	(1)
Missouri	18	243,465	2,354,175	18	273,348	2,610,954
Montana	3	2,374	25,316	3	6,269	44,992
Nevada	1	(1)	(1)	1	(1)	(1)
New Jersey	3	204	1,516	2	(1)	(1)
New Mexico	3	2,389	23,975	3	1,329	14,010
New York	12	98,592	991,799	12	104,829	1,030,960
North Carolina	1	(1)	(1)	1	(1)	(1)
Ohio	[2] 32	934,407	9,511,270	33	1,089,385	10,970,605
Oklahoma	1	(1)	(1)	2	(1)	(1)
Oregon	2	(1)	(1)	1	(1)	(1)
Pennsylvania	136	700,380	5,634,806	142	794,951	6,425,675
Porto Rico	19	8,264	132,365	18	9,988	148,326
Rhode Island	1	(1)	(1)	1	(1)	(1)
South Dakota	2	(1)	(1)	2	(1)	(1)
Tennessee	18	144,292	1,111,781	14	175,685	1,344,508
Texas	5	60,565	570,334	6	74,638	698,138
Utah	10	12,853	172,434	9	22,062	265,060
Vermont	10	56,484	710,739	10	66,245	788,936
Virginia	31	172,776	1,409,447	30	192,429	1,491,568
Washington	6	28,188	353,450	6	29,636	357,297
West Virginia	10	238,714	1,884,682	9	270,895	1,879,223
Wisconsin	25	235,030	2,129,701	25	244,903	2,204,504
Wyoming	1	(1)	(1)			
Undistributed		79,296	871,178		99,415	1,029,524
	[2] 450	4,072,000	39,596,423	450	4,580,823	42,609,141

[1] Included under "Undistributed." [2] Revised figures.

Lime sold by producers in the United States, by uses, 1924–25

Use	Quantity		Value	
	Percentage of total	Short tons	Total	Average
1924				
Agricultural	6.1	248,336	$1,864,514	$7.51
Building	53.3	2,169,700	23,011,935	10.61
Chemical:				
Glass works	1.8	72,822	622,456	8.55
Metallurgy	8.3	336,813	2,727,518	8.10
Paper mills	7.3	300,101	2,528,242	8.42
Refractory lime (dead-burned dolomite)	8.1	328,659	3,209,257	9.76
Sugar refineries	.4	17,061	246,079	14.42
Tanneries	1.3	53,349	515,133	9.66
Other uses[1]	13.4	545,159	4,871,289	8.94
Total chemical	40.6	1,653,964	14,719,974	8.90
	100.0	4,072,000	39,596,423	9.72
Hydrated lime (included in above totals)		1,316,664	13,199,846	10.03
1925				
Agricultural	6.5	298,976	2,129,169	7.12
Building	52.1	2,387,267	24,115,420	10.10
Chemical:				
Glass works	1.6	73,011	622,909	8.53
Metallurgy	9.0	411,190	3,007,228	7.31
Paper mills	8.2	376,670	3,174,851	8.43
Refractory lime (dead-burned dolomite)	8.6	392,147	3,730,510	9.51
Sugar refineries	.4	19,089	280,985	14.72
Tanneries	1.4	62,933	557,187	8.85
Other uses[1]	12.2	559,540	4,990,882	8.92
Total chemical	41.4	1,894,580	16,364,552	8.64
	100.0	4,580,823	42,609,141	9.30
Hydrated lime (included in above totals)		1,560,848	15,287,461	9.79

[1] Details of distribution shown in following table.

It is necessary to classify much material as "unspecified," because many of the manufacturers do not report the uses of that part of their lime which they sell for chemical purposes. This lime is known to be applied to several of the uses enumerated, but the following figures are the best available:

Chemical lime sold by producers in the United States for "other uses," 1924–25

Use	1924		1925	
	Short tons	Value	Short tons	Value
Acetic acid			6,527	$55,532
Alcohol manufacture and dehydration	9,182	$74,324	681	5,556
Alkali works (ammonia, soda, potash)	13,351	117,401	30,617	255,618
Bleaching powder	18,723	179,473	12,939	105,748
Bleach, liquid	15,405	150,222	5,258	49,531
Calcium acetate	4,125	33,062	10,526	90,062
Calcium carbide	14,921	140,196	16,354	140,900
Coke and gas manufacture (gas purification and plant by-products)	25,142	197,122	28,999	224,433
Creameries and dairies	1,546	31,826	2,083	42,697
Disinfectants (chloride of lime, etc.)	530	3,674	4,268	38,588
Flour mills	185	2,793	415	4,430
Glue	6,469	58,740	11,739	100,008
Insecticides (spraying materials)	11,593	121,365	14,019	137,564
Oil and fat manufacture	3,036	34,709	4,416	53,935
Paint (kalsomine, whitewash, varnish, etc.)	4,756	45,760	3,894	31,869
Rubber	1,631	19,801	3,569	42,302
Salt refining	1,480	13,631	1,100	8,320
Sand-lime and slag brick	26,549	231,804	25,144	210,450
Sanitation (sewage and garbage purification, etc.)	7,396	56,326	9,307	69,050
Silica brick	10,495	90,127	25,901	234,741
Soap	32,807	197,272	16,008	106,003
Textiles	2,386	20,772	1,032	11,817
Water purification	113,577	1,073,080	115,776	1,085,825
Wood distillation	5,871	56,486	2,807	27,206
Undistributed [1]	11,008	118,254	35,193	295,013
Unspecified	202,995	1,803,069	170,968	1,564,584
	545,159	4,871,289	559,540	4,990,882

[1] 1924: Lime used in acid neutralization, artificial silk, asphalt, buffing compounds, corn products, dyes, explosives, food products, gelatin (edible), magnesia, oxygen, proprietary medicines, sheep dip, and snuff. 1925: Lime used in acid neutralization and drying, asphalt and clay filler, baking powder, bichromate refining, buffing compounds, dyes, explosives, fertilizer filler, food products, gelatin (edible), magnesia, oil refining, poultry food, proprietary medicines, sheep dip, and tobacco.

Lime sold by producers in the United States in 1925, by States and uses

State	Building		Agricultural		Chemical												Total	
					Glass works		Paper mills		Sugar refineries		Tanneries		Metallurgy		Other chemical uses			
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama	56,942	$537,358	(1)	(1)			(1)	(1)			(1)	(1)	(1)	(1)	41,307	$317,090	207,699	$1,679,155
Arizona	14,964	188,874	(1)	(1)	(1)	(1)					(1)	(1)	(1)	(1)	(1)	(1)	39,045	394,023
Arkansas	17,566	163,608	(1)	(1)	(1)	(1)	(1)	(1)					(1)	(1)	(1)	(1)	24,791	223,965
California	49,840	533,469	7,691	$49,281			(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	6,497	78,920	70,805	745,132
Colorado	(1)	(1)											(1)	(1)	(1)	(1)	(1)	(1)
Connecticut	56,571	656,722	(1)	(1)			(1)	(1)									58,449	672,821
Florida	(1)	(1)	(1)	(1)													17,793	186,650
Georgia	(1)	(1)	(1)	(1)													(1)	(1)
Hawaii	(1)	(1)	(1)	(1)					(1)	(1)					(1)	(1)	(1)	(1)
Idaho	(1)	(1)	(1)	(1)											(1)	(1)	(1)	(1)
Illinois	50,588	541,377	(1)	(1)			10,689	$84,814	(1)	(1)	4,111	$38,967	9,185	$79,302	21,444	183,671	96,066	928,632
Indiana	19,279	167,967	9,426	43,874	(1)	(1)	39,404	329,131	(1)	(1)	(1)	(1)	17,322	144,781	39,910	359,654	127,878	1,067,040
Iowa	(1)	(1)															(1)	(1)
Kentucky	(1)	(1)	(1)	(1)			(1)	(1)			(1)	(1)	(1)	(1)	(1)	(1)	9,433	71,300
Maine	63,348	834,308	(1)	(1)			(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	115,571	1,291,812
Maryland	11,336	93,464	50,605	412,777									2,577	17,859			64,518	524,100
Massachusetts	148,246	2,163,991	7,284	25,038			24,499	225,132					(1)	(1)	(1)	(1)	197,732	2,610,279
Michigan	12,165	121,202	100	1,000			50,097	486,725			2,351	23,469			30,323	277,556	95,036	909,952
Minnesota	(1)	(1)					(1)	(1)					(1)	(1)	(1)	(1)	(1)	(1)
Missouri	94,910	881,105	669	5,663	(1)	(1)	15,766	174,265	(1)	(1)	3,291	31,936	34,553	281,596	123,060	1,226,482	273,348	2,610,954
Montana	(1)	(1)											(1)	(1)	(1)	(1)	6,269	44,992
Nevada	(1)	(1)			(1)	(1)							(1)	(1)	(1)	(1)	(1)	(1)
New Jersey	(1)	(1)															(1)	(1)
New Mexico	(1)	(1)											(1)	(1)	(1)	(1)	1,329	14,010
New York	35,036	306,756	3,902	33,696	(1)	(1)	18,771	194,161	(1)	(1)	3,101	43,686	12,764	140,766	30,664	305,405	104,829	1,030,960
North Carolina	(1)	(1)									(1)	(1)					(1)	(1)
Ohio	785,446	7,937,117	26,004	188,236	69,460	$588,146	21,697	169,609	(1)	(1)	(1)	(1)	9,385	80,289	176,835	2,002,213	1,089,385	10,970,605
Oklahoma	(1)	(1)															(1)	(1)
Oregon	(1)	(1)															(1)	(1)
Pennsylvania	314,333	2,786,158	129,834	958,411	(1)	(1)	54,149	401,574	(1)	(1)	15,184	126,005	75,832	461,716	204,556	1,681,875	794,951	6,425,675
Porto Rico	343	3,053	1,435	8,989					8,138	$135,484					72	800	9,988	148,326
Rhode Island	(1)	(1)	(1)	(1)							(1)	(1)			(1)	(1)	(1)	(1)
South Dakota	(1)	(1)											(1)	(1)	(1)	(1)	(1)	(1)
Tennessee	86,562	786,637	(1)	(1)			47,126	263,707	(1)	(1)	1,964	13,321	14,397	96,819	23,798	166,418	175,685	1,344,508
Texas	52,961	506,118					(1)	(1)	(1)	(1)			(1)	(1)	12,460	118,955	74,638	698,138
Utah	11,332	146,956											(1)	(1)	(1)	(1)	22,062	265,060

[1] Included under "Undistributed."

Lime sold by producers in the United States in 1925, by States and uses—Continued

State	Building		Agricultural		Chemical												Total	
					Glass works		Paper mills		Sugar refineries		Tanneries		Metallurgy		Other chemical uses			
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Vermont	32,656	$451,804	976	$4,640			13,212	$135,144			4,872	$55,469	5,556	$53,483	8,973	$88,405	66,245	$788,936
Virginia	86,307	741,075	28,053	190,475	(1)	(1)	5,237	37,408	(1)	(1)	12,305	87,741	5,654	39,131	54,373	392,038	192,429	1,491,568
Washington	21,107	257,337	(1)	(1)	(1)	(1)	(1)	(1)	2,780	$37,381			(1)	(1)	2,399	30,200	29,636	357,297
West Virginia	34,427	263,882	18,877	123,091	(1)	(1)	(1)	(1)			(1)	(1)	69,728	382,733	132,193	983,203	270,895	1,879,223
Wisconsin	232,023	2,045,612	(1)	(1)			(1)	(1)			(1)	(1)			4,696	84,505	244,903	2,204,504
Undistributed	98,979	999,470	14,120	83,998	3,551	$34,763	76,023	673,181	8,171	108,120	15,754	136,602	154,237	1,228,753	38,127	424,002	99,415	1,029,524
	2,387,267	24,115,420	298,976	2,129,169	73,011	622,909	376,670	3,174,851	19,089	280,985	62,933	557,187	411,190	3,007,228	951,687	8,721,392	4,580,823	42,609,141

[1] Included under "Undistributed."

Building lime.—Demand for building lime differed greatly in the different States, but most producers reported an increase. Competition was very keen. Of the larger lime-producing States, only Indiana, Maine, Massachusetts, and Michigan showed sales that were less than in 1924 or about the same. Ohio and Pennsylvania are the largest producers of lime for construction, and the sales for this purpose from those States increased, respectively, 17 per cent and 9 per cent in 1925. Over two-thirds of the lime sold from Pennsylvania for this purpose was quicklime, whereas 96 per cent of the building lime furnished by Ohio was hydrated lime, a part of which was high-grade finishing lime. The sales from Ohio, according to grades of lime, are given in the following table:

Lime sold by Ohio producers for construction, 1923–1925

	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
Quicklime	33,374	$281,029	33,675	$282,171	34,601	$274,853
Hydrated lime	580,999	5,832,040	637,835	6,609,598	750,845	7,662,264
	614,373	6,113,069	671,510	6,891,769	785,446	7,937,117

Of the hydrated lime sold by producers in the United States in 1925, Ohio produced 779,286 tons, or about one-half, of which 750,845 tons were sold for construction and were widely distributed throughout the continental United States. Figures of distribution, as reported to the Bureau of Mines, presented for blocks of contiguous States roughly comprising various freight-rate groups, are given below. It is possible that some of the lime reported as supplied to the district including Ohio is reshipped by dealers:

Shipments of hydrated lime from plants in the United States and in Ohio, 1924–25 [1]

Shipped to—	1924				
	From all plants		From Ohio plants		
	Short tons	Distribution (per cent)	Short tons	Distribution (per cent)	Group total (per cent)
Illinois, Indiana, Michigan, Ohio	377,979	28.8	308,052	47.2	81.5
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, West Virginia	539,702	41.1	234,632	36.0	43.5
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	35,836	2.7	15,073	2.3	42.1
Florida, Georgia, North Carolina, South Carolina, Virginia	125,814	9.6	48,328	7.4	38.4
Alabama, Kentucky, Louisiana, Mississippi, Tennessee	65,141	5.0	19,225	2.9	29.5
Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, Texas, Wisconsin	130,631	10.0	26,664	4.1	20.4
Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	36,916	2.8	757	.1	2.1
	1,312,019	100.0	652,731	100.0	49.8

[1] Figures cover over 99 per cent of total shipments of hydrated lime.

Shipments of hydrated lime from plants in the United States and in Ohio, 1924–25

Shipped to—	1925				
	From all plants		From Ohio plants		
	Short tons	Distribution (per cent)	Short tons	Distribution (per cent)	Group total (per cent)
Illinois, Indiana, Michigan, Ohio	450,555	29.0	365,249	47.0	81.1
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania, West Virginia	613,701	39.5	261,273	33.6	42.6
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	54,819	3.5	21,717	2.8	39.6
Florida, Georgia, North Carolina, South Carolina, Virginia	172,432	11.1	71,395	9.2	41.4
Alabama, Kentucky, Louisiana, Mississippi, Tennessee	68,271	4.4	22,833	2.9	33.4
Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, Texas, Wisconsin	141,286	9.1	33,496	4.3	23.7
Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming	51,915	3.4	1,301	.2	2.5
	1,552,979	100.0	777,264	100.0	50.0

Chemical lime.—Sales of chemical lime by producers in 1925 increased 15 per cent in quantity, following a decrease of 3 per cent in 1924. Sales for all of the chief chemical activities increased, as did those for many of the minor uses, reported sales of which are apt to vary on account of incompleteness of classification.

Agricultural lime.—From 1914 through 1923, with the exception of the year 1919, there was a steady decrease in sales of agricultural lime. In 1924 there was an increase of 3 per cent in the quantity as compared with 1923 and in 1925 an increase of 20 per cent over 1924. All the chief States producing agricultural lime reported increases in sales for 1925. It is also noteworthy that sales of pulverized limestone for agricultural purposes increased 6 per cent in quantity in 1924 and 44 per cent in 1925. Sales of calcareous marl, of which all but a negligible quantity sold as a filler was used for agriculture, decreased 6 per cent in quantity in 1925, and there was also a large decrease in the quantity of lime reported burned from oyster shells.

The following table assembles available data on the quantity and value of different kinds of agricultural lime sold by producers in 1924 and 1925. The method by which the effective lime content of the different forms of land lime is calculated was set forth in Mineral Resources for 1921.

Agricultural lime sold by producers in the United States, 1924–25, by kinds

Kind	Short tons		Value	
	Gross	Effective lime content	Total	Average
1924				
Lime from limestone:				
Quicklime	119,926	100,700	$703,692	$5.87
Hydrated	128,410	89,900	1,160,822	9.04
Lime from oyster shells	40,267	33,800	242,789	6.03
Limestone (pulverized)	1,352,600	581,600	2,046,860	1.51
Calcareous marl	72,710	31,200	225,383	3.10
1925				
Lime from limestone:				
Quicklime	132,011	110,800	744,518	5.64
Hydrated	166,965	116,900	1,384,651	8.29
Lime from oyster shells	12,547	10,500	106,087	8.46
Limestone (pulverized)	1,954,480	840,400	2,880,589	1.47
Calcareous marl	68,670	29,500	187,839	2.74

No attempt has been made to collect figures covering the calcareous marl used for the manufacture of cement, and the figures in the foregoing table represent the output of fresh-water marl, produced chiefly in Virginia (31,114 tons, valued at $70,354) and West Virginia (17,434 tons, valued at $53,219). Other productive States are California, Illinois, Maryland, Michigan, North Carolina, Ohio, South Carolina, Utah, and Wisconsin. During 1925 the Michigan State College, in cooperation with the Michigan Geological Survey, conducted experimental demonstrations of digging marl, by means of special machinery, on farms throughout the State. As a result considerable quantities of marl were dug and used for agricultural purposes. No record of the quantity or value of this material is at present available.

HYDRATED LIME

The statistics of the output of hydrated lime include only the product made in hydrating machines and omit hand-slaked lime. There was an increase of 19 per cent in the quantity of hydrated lime sold by producers in 1925. The increased sales of hydrated lime were general for all purposes for which this lime was sold.

Fourteen more plants, chiefly in Missouri, New York, Ohio, and Pennsylvania, reported the manufacture of hydrated lime in 1925 than in 1924. The average value per ton decreased 24 cents in 1925. Ohio and Pennsylvania are the largest producers of hydrated lime, producing, respectively, 50 per cent and 14 per cent of the total output in 1925. Details of the distribution of hydrated lime from Ohio by freight-rate groups are given on pages 141 and 142.

Hydrated lime sold by producers in the United States, 1916–1925

Year	Number of plants in operation	Short tons	Value	
			Total	Average
1916	89	717,382	$3,626,998	$5.06
1917	90	709,157	4,643,004	6.55
1918	90	620,216	5,342,113	8.61
1919	93	777,408	7,061,146	9.08
1920	98	853,116	9,287,562	10.89
1921	105	792,970	7,421,637	9.36
1922	114	1,106,063	9,868,980	8.92
1923	121	1,225,928	12,229,598	9.98
1924	[1] 120	1,316,664	13,199,846	10.03
1925	134	1,560,848	15,287,461	9.79

[1] Revised figures.

Hydrated lime sold by producers in the United States, 1924–25, by States

State	1924		1925	
	Short tons	Value	Short tons	Value
Alabama	23,465	$215,468	25,989	$229,076
California	(1)	(1)	8,715	113,356
Indiana	44,697	400,965	43,815	410,319
Maryland	29,134	274,195	33,768	307,805
Missouri	60,651	642,995	71,290	750,710
New York	(1)	(1)	32,129	291,421
Ohio	654,763	6,734,863	779,286	7,877,738
Pennsylvania	189,431	1,727,749	219,737	2,020,337
Tennessee	44,242	455,641	48,364	454,957
Texas	25,496	243,147	29,529	281,824
Virginia	38,001	334,393	52,374	440,734
West Virginia	44,841	386,250	51,608	384,898
Wisconsin	18,246	201,745	18,650	204,244
Undistributed [2]	143,697	1,582,435	145,594	1,520,042
	1,316,664	13,199,846	1,560,848	15,287,461

[1] Included under "Undistributed."
[2] 1924: Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Nevada, New York, Rhode Island, Utah, Vermont, and Washington. 1925: Same as 1924, excluding California and New York but including Arkansas and Montana.

Hydrated lime sold by producers in the United States, 1924–25, by uses

Use	1924		1925	
	Short tons	Value	Short tons	Value
Agricultural	128,410	$1,160,822	166,965	$1,384,651
Building	1,029,384	10,420,151	1,194,571	11,872,556
Chemical:				
Glass works	862	10,338	1,581	16,978
Metallurgy	5,765	65,412	9,826	103,555
Paper mills	11,907	119,834	28,126	316,172
Sugar refineries	4,145	51,065	5,670	77,154
Tanneries	18,349	177,062	22,526	210,258
Other uses	117,842	1,195,162	131,583	1,306,137
Total chemical	158,870	1,618,873	199,312	2,030,254
	1,316,664	13,199,846	1,560,848	15,287,461

EXPORTS AND IMPORTS

Lime exported from the United States, 1916–1925

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1916	23,973	$132,769	$5.54	1921	5,192	$109,769	$21.14
1917	18,794	168,671	8.97	1922	8,289	116,649	14.07
1918	7,191	105,803	14.71	1923	11,789	170,289	14.44
1919	6,372	108,370	17.01	1924	14,905	212,340	14.25
1920	5,921	128,296	21.67	1925	14,800	218,696	14.78

Lime exported from the United States, 1924–25, by countries

Country	1924		1925	
	Short tons	Value	Short tons	Value
North America:				
Canada	6,647	$83,530	6,584	$78,634
Central America—				
British Honduras	(1)	3	(1)	7
Costa Rica	2	84	(1)	7
Guatemala	1	29		
Honduras	89	1,801	320	4,392
Nicaragua	106	4,262	100	3,543
Panama	132	3,156	116	2,614
Salvador	22	591	2	55
Mexico	5,137	50,643	3,088	30,090
Newfoundland and Labrador	(1)	42	8	255
West Indies—				
British—				
Jamaica			20	506
Other British	27	587	42	887
Cuba	598	10,791	1,166	23,838
Dominican Republic	767	19,745	1,212	25,150
Virgin Islands of the United States	119	3,094	129	3,544
South America:				
Bolivia	3	60		
Brazil			1	33
Chile	13	407	133	3,323
Colombia	77	2,182	145	3,734
Dutch Guiana			(1)	17
Ecuador	30	901	(1)	14
Peru	141	3,450	508	12,575
Venezuela	19	412	23	351
Europe:				
Belgium	43	894		
Germany	353	14,126		
Netherlands			183	2,600
Sweden	8	360	21	851
United Kingdom	15	394	37	921
Asia:				
China	4	145	1	50
Dutch East Indies	1	14		
Japan	(1)	4	140	4,049
Philippine Islands	503	9,572	794	15,899
Africa:				
British South			(1)	28
Liberia	6	108		
Oceania:				
Australia	14	339	15	468
French Oceania	2	83	1	40
New Zealand	26	531	11	207
Other			(1)	14
	14,905	212,340	14,800	218,696

[1] Less than 1 ton.

Lime imported for consumption in the United States, 1916–1925[1]

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1916	7,959	$71,663	$9.00	1921	10,811	$234,798	$21.72
1917	7,353	70,505	9.59	1922	14,112	290,845	20.61
1918	6,650	73,458	11.05	1923	25,407	428,903	16.88
1919	8,679	128,519	14.81	1924	20,480	377,994	18.46
1920	22,688	392,137	17.28	1925	15,323	285,599	18.64

[1] Most of the lime imported into the United States comes from Canada.

PHOSPHATE ROCK

By W. M. Weigel and B. H. Stoddard[1]

GENERAL CONDITIONS IN THE UNITED STATES

The mining of phosphate rock in 1925 showed notable increase in output which more than overcame the decline during 1924. Better domestic demand and the temporary shortage of high-grade phosphates in Europe during the latter part of the year were responsible for this improvement. At the end of the year prices for the lower grades were about 15 per cent higher and for the higher grades 20 to 25 per cent higher than at the beginning of the year.

Many producers are finding difficulty in making a profit with labor and supplies so much higher than in 1912 and 1913, for average realizations on phosphate rock (f.o.b. mines) are approximately the same as or less than in the pre-war years.

Of the producers who reported their opinion of conditions during 1925, 70 per cent say that the general conditions have improved, 18 per cent report normal conditions, and 12 per cent report a downward tendency. The reasons given for improved conditions are increased demand, better markets for farm products with increased buying capacity of the farmers, and fewer operators producing. Most of the larger producers of phosphate rock are also manufacturers of fertilizers or chemicals, and apparently these companies are in better condition than those which mine to sell on the open market. Some of the latter companies are having considerable difficulty in marketing outputs, because the larger consumers have gone into the business of mining and preparing the phosphate rock for their respective plants. Evidently independent producers must look very largely to the foreign market and to uses other than fertilizers for the sale of their rock.

PHOSPHATE ROCK SOLD

In 1925 the quantity of phosphate rock sold or used by producers in the United States amounted 3,481,819 long tons, an increase of 614,030 tons, or 21 per cent, over 1924, and has been exceeded only by the record year 1920. The total value of the rock increased $1,293,595, or 13 per cent, and nearly equaled the value in 1923. The average selling value per ton for 1924 was $3.57, whereas that for 1925 was $3.32, a decrease of 25 cents per ton. The quantity sold or used in 1925 was greater than the quantity mined by 228,148 tons, or 7 per cent; the excess was supplied by stocks held over from the preceding year.

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Phosphate rock sold or used by producers in the United States, 1916–1925

Year	Long tons	Value	Year	Long tons	Value
1916	1,982,385	$5,896,993	1921	2,064,025	$12,270,070
1917	2,584,287	7,771,084	1922	2,417,883	10,482,846
1918	2,490,760	8,214,463	1923	3,006,706	11,576,049
1919	2,271,983	11,591,268	1924	2,867,789	10,252,083
1920	4,103,982	25,079,572	1925	3,481,819	11,545,678

In this report the unit of quantity used in referring to phosphate rock is the long ton (2,240 pounds), except as otherwise specified. The value of domestic material means the selling value f. o. b. mines, so far as that can be determined from the returns submitted by the respective companies. Some of the companies, however, ship their rock to drying plants before selling, and others sell the rock f. o. b. foreign ports; therefore the figures given by these companies probably include an undetermined charge for transportation and are somewhat higher than the value at the mine.

The sales of raw phosphate for direct application to the soil reached a maximum in 1919, as shown in the following table. In 1921 there was a sharp break in this business, and sales remained relatively low until 1925, when they amounted to 31,999 tons, or 40 per cent of the peak sales in 1919, and an increase of 123 per cent over 1924. Tennessee supplied most of the material.

Raw phosphate rock sold by producers in the United States for direct application to the soil, 1916–1925, in long tons

1916	70,233	1921	13,503
1917	75,861	1922	16,029
1918	45,294	1923	10,548
1919	79,189	1924	14,320
1920	72,801	1925	31,999

The phosphate rock sold to blast furnaces in 1925 was 25,801 tons, a decrease of 30 per cent from that sold in 1924. The quantity sold for the manufacture of phosphorus and chemicals containing phosphorus was 129,955 tons, or an increase of 20 per cent over similar sales in 1924. The quantity of phosphate rock sold as an ingredient for stock food was 2,605 tons, a decrease of 333 tons from 1924. The demand for concrete aggregate in Florida in localities where sand and gravel were not always available caused the marketing of some phosphate rock for this purpose during 1925, but the quantity was less than 4,000 tons.

PHOSPHATE ROCK MINED

The quantity of rock mined in any year is not the same as the quantity sold or used, for stocks at the mines on December 31 differ from year to year. The quantity of rock mined in 1925 was 3,253,671 long tons, an increase of 408,368 tons, or 14 per cent, over 1924. All the producing districts showed increases, the highest, 106 per cent, occurring in the Western States. The total output, however, in those States is not large, so the great increase had a relatively small effect upon the total.

Phosphate rock mined in the United States, 1916–1925, by States, in long tons

Year	Florida	South Carolina	Tennessee and Kentucky	Western States	Total
1916	1,701,890	39,035	426,521	1,703	2,169,149
1917	2,328,138	45,541	461,773	16,434	2,851,886
1918	1,884,891	33,673	353,726	11,955	2,284,245
1919	1,254,609	49,032	530,973	16,935	1,851,549
1920	3,255,720	42,709	627,677	48,895	3,975,001
1921	2,088,251	----------	332,962	4,961	2,426,174
1922	2.018,809	----------	300,566	17,481	2,336,856
1923	2,421,571	----------	487,420	34,575	2,913,566
1924	2,373,530	----------	431,038	40,735	2,845,303
1925	2,672,650	2,147	495,072	83,802	3,253,671

STOCKS

Precise measurement of stocks of phosphate rock in the hands of producers is difficult. The estimate of stocks on December 31, 1924, amounted to about 716,000 tons. Adding to this the quantity mined during 1925 and subtracting from the sum the sales during the year gives an estimate of 488,000 tons on hand December 31, 1925. The total stocks on December 31, 1925, as directly reported by producers, amounted to 490,960 tons. This shows that during 1925 stocks were reduced to a considerably lower figure than during the two preceding years.

PRODUCTION BY STATES

In 1925 both the quantity and the total value of phosphate rock sold or used by producers in each of the States increased. Sales in the Western States increased in much larger proportion than those in the Florida, Tennessee, and Kentucky districts. There was a decline in average value; it ranged from 5 cents per ton in the Tennessee district to 64 cents per ton in the Western district.

Phosphate rock sold or used by producers in the United States, 1924–25, by States

State	1924		1925	
	Long tons	Value	Long tons	Value
Florida:				
Hard rock	143,115	$629,579	171,649	$707,933
Land pebble	2,289,466	7,387,897	2,758,315	8,081,137
	2,432,581	8,017,476	2,929,964	8,789,070
South Carolina: Land rock	----------	----------	2,147	8,051
Tennessee:[1]				
Brown rock[1]	375,260	1,958,272	477,077	2,429,059
Blue rock	21,378	81,766		
	396,638	2,040,038	477,077	2,429,059
Western States[2]	38,570	194,569	72,631	319,498
Grand total	2,867,789	10,252,083	3,481,819	11,545,678

[1] Includes small quantity of brown rock from Kentucky.
[2] 1924, Idaho, Montana, and Wyoming; 1925, Idaho and Wyoming.

FLORIDA

Florida continued to lead in the production of phosphate rock and was the source of 84 per cent of all the phosphate rock sold or used by producers in the United States in 1925. The increase over 1924 was 20 per cent in quantity and 10 per cent in value.

In the hard-rock field, the production of which is largely exported, both quantity and value increased because of the stronger European demand for high-grade phosphate during the latter part of the year. Production of hard-rock phosphate has, however, been declining for several years, because of increased cost of production and the increased competition of North African phosphates in the European markets. No new mines are being developed, the number of the companies operating is less, and those that are busy are mining only from pits that have been stripped and developed. Indications are that the production of hard rock will decrease further, at least during the next few years.

Land pebble rock constituted 94 per cent of the entire Florida output in 1925, and conditions, generally speaking, were considerably better than in 1924. Pebble rock sold in 1925 increased in both quantity and value.

Florida phosphate rock sold or used by producers, 1916–1925

Year	Hard rock			Soft rock		
	Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average
1916	[1] 47,087	[1] $295,755	$5.26	(1)	(1)	$9.76
1917	[1] 18,608	[1] 159,366	5.93	(1)	(1)	12.40
1918	62,052	377,075	6.08	8,331	$147,103	17.66
1919	285,467	2,452,563	8.59	14,498	196,318	13.54
1920	400,249	4,525,191	11.31	13,953	190,551	13.66
1921	175,774	1,806,671	10.28	4,419	20,153	4.56
1922	188,084	1,308,201	6.96	446	3,500	7.85
1923	199,516	1,071,675	5.37			
1924	143,115	629,579	4.40			
1925	171,649	707,933	4.12			

Year	Land pebble			Total		
	Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average
1916	1,468,758	$3,874,410	$2.64	1,515,845	$4,170,165	$2.75
1917	2,003,991	5,305,127	2.65	2,022,599	5,464,493	2.70
1918	1,996,847	5,565,928	2.79	2,067,230	6,090,106	2.95
1919	1,360,235	5,149,048	3.79	1,660,200	7,797,929	4.70
1920	2,955,182	14,748,620	4.99	3,369,384	19,464,362	5.78
1921	1,599,835	8,604,818	5.38	1,780,028	10,431,642	5.86
1922	1,870,063	7,035,821	3.76	2,058,593	8,347,522	4.05
1923	2,348,137	7,987,752	3.40	2,547,653	9,059,427	3.56
1924	2,289,466	7,387,897	3.23	2,432,581	8,017,476	3.30
1925	2,758,315	8,081,137	2.93	2,929,964	8,789,070	3.00

[1] Soft rock included with hard rock.

Prices of pebble rock rise rapidly with increase in content of tricalcium phosphate (known in the trade as "B. P. L."—that is, bone phosphate of lime), as shown in the following table:

Prices of pebble phosphate per long ton, f. o. b. Florida[2]

Export prices:		Domestic prices:	
76 to 77 per cent	$6.30	76 to 77 per cent	$5.75
75 per cent	5.65	75 per cent	5.00
74 to 75 per cent	5.40	74 to 75 per cent	4.75
70 per cent	3.75	70 per cent	3.00
68 per cent	3.50		

SOUTH CAROLINA

South Carolina again entered the list of producers in 1925, after having made no output in 1923 and 1924. The quantity mined in 1925, however, 2,147 tons, was comparatively small. The average value was $3.75 per ton.

TENNESSEE AND KENTUCKY

The total quantity of phosphate rock sold or used by producers in Tennessee and Kentucky in 1925 increased 20 per cent over 1924. The value increased 19 per cent. As only one producer reported from Kentucky, figures for that State are included with those for Tennessee. Likewise, there was but one producer of Tennessee blue rock, so the figures have been combined with those of brown rock. In general, conditions in the Tennessee district were better than in 1924.

Tennessee phosphate rock sold or used by producers, 1916–1925[1]

Year	Brown rock[1]			Blue rock			Total[1]		
	Long tons	Value at mines		Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average		Total	Average
1916	364,108	$1,357,888	$3.73	47,682	$152,465	$3.20	411,790	$1,510,353	$3.67
1917	447,203	1,920,533	4.29	65,904	205,820	3.12	513,107	2,126,353	4.14
1918	[2]374,535	[2]1,917,546	[2]5.12	(2)	(2)	(2)	374,535	1,917,546	5.12
1919	475,475	3,123,565	6.57	58,550	290,951	4.97	534,025	3,414,516	6.39
1920	556,177	4,425,761	7.96	78,671	518,234	6.59	634,848	4,943,995	7.79
1921	252,543	1,666,358	6.60	25,163	146,198	5.81	277,706	1,812,556	6.53
1922	344,231	2,055,579	5.97	9,078	51,803	5.71	353,309	2,107,382	5.96
1923	427,799	2,335,262	5.46	919	5,647	6.14	428,718	2,340,909	5.46
1924	375,260	1,958,272	5.22	21,378	81,766	3.82	396,638	2,040,038	5.14
1925	[2]477,077	[2]2,429,059	[2]5.09	(2)	(2)	(2)	477,077	2,429,059	5.09

[1] Small quantity of brown rock from Kentucky included with Tennessee.
[2] Blue rock included with brown rock.

WESTERN STATES

The increase in the quantity of phosphate rock mined in the Western States in 1925 was 106 per cent as compared with 1924. This phenomenal gain was probably due to the better financial condition of western farmers and to a growing appreciation of the advantages of fertilizers. The quantity and value of the phosphate rock

[1] Engineering and Mining Journal-Press, vol. 121, Jan. 9, 1926, p. 76.

sold or used by producers in these States in 1925 were greater than in any previous year, the quantity being greater than 1924 by 88 per cent but the value by only 64 per cent, as the average value per ton decreased from $5.04 in 1924 to $4.40 in 1925. This decrease in the value per ton will further tend to increase the sales of western phosphate rock by helping to overcome the competition of Tennessee and Florida phosphate in the northern Mississippi Valley. At present differences in freight rates prevent western producers from competing at the acidulators in the Central States with southern phosphate rock, and the main consuming districts for western phosphate are in the Western and Pacific Coast States. In 1925 there were three producers in Idaho and one in Wyoming.

Western States phosphate rock sold or used by producers, 1916–1925

Year	Long tons	Value at mines		Year	Long tons	Value at mines	
		Total	Average			Total	Average
1916	1,703	$5,350	$3.14	1921	6,291	$25,872	$4.11
1917	15,096	41,756	2.77	1922	4,481	19,692	4.39
1918	11,955	42,161	3.53	1923	30,235	175,713	5.79
1919	16,935	69,835	4.12	1924	38,570	194,569	5.04
1920	55,609	304,006	5.47	1925	72,631	319,498	4.40

IMPORTS OF PHOSPHATIC FERTILIZERS

The phosphatic fertilizers imported in 1925 were bone dust or animal carbon, bone ash, guano, crude phosphates, and basic slag. Imports of the bone-dust group were approximately the same in both quantity and value as for 1924. Imports of guano declined 31 per cent in quantity and 3 per cent in value. The quantity of crude phosphates was less than for any year since 1920, being 17 per cent of the quantity imported in 1924. The quantity of basic slag imported was less than for any year since 1921. Imports of phosphatic materials for the last five years are shown in the following table:

Phosphatic fertilizers imported for consumption in the United States, 1921–1925

Fertilizer	1921		1922		1923		1924		1925	
	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value
Bone dust, or animal carbon, and bone ash, fit only for fertilizing	21,516	$799,591	32,274	$860,683	54,148	$1,691,330	22,242	$706,727	24,981	$724,473
Guano	1,751	89,527	13,007	514,325	28,599	1,104,003	25,241	754,234	17,407	730,046
Phosphates, crude	3,535	43,960	5,890	95,846	6,725	92,263	16,098	181,515	2,735	37,932
Slag, basic, ground or unground	-------	-------	324	9,762	361	6,843	703	9,598	181	2,815

EXPORTS OF PHOSPHATE ROCK

Exports of phosphate rock from the United States in 1925 increased 6 per cent in quantity and 11 per cent in value as compared with 1924. The quantity was greater than for any year since 1920. The following table shows exports of phosphate rock for the last 10 years:

Phosphate rock, ground or unground, exported from the United States, 1916–1925

Year	High-grade rock		Land pebble		Other		Total	
	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value
1916	28,631	$286,948	214,358	$863,078	689	$6,365	243,678	$1,156,391
1917	12,403	113,392	138,010	548,203	15,945	173,450	166,358	835,045
1918	57,771	445,419	64,559	303,758	21,125	163,308	143,455	912,485
1919	215,039	2,261,852	128,860	904,308	34,832	401,822	378,731	3,567,982
1920	344,896	4,496,457	693,355	5,593,814	31,461	479,904	1,069,712	10,570,175
1921	182,594	2,592,541	544,425	4,627,875	6,293	99,721	733,312	7,320,137
1922	202,300	2,548,587	512,777	3,269,179	4,217	40,401	719,294	5,858,167
1923	194,339	2,477,501	630,565	3,273,906	2,647	21,664	827,551	5,772,171
1924	150,746	1,814,194	656,005	3,299,965	12,022	96,673	818,773	5,120,832
1925	158,985	2,283,076	697,891	3,287,370	13,324	107,317	870,200	5,677,763

The following table shows the relation between the total quantity of phosphate rock sold or used by producers and the quantity exported during the last 10 years:

Phosphate rock sold or used by producers in and exported from the United States, 1916–1925

Year	Sold or used	Exported	Proportion of exports to quantity sold or used	Year	Sold or used	Exported	Proportion of exports to quantity sold or used
	Long tons	*Long tons*	*Per cent*		*Long tons*	*Long tons*	*Per cent*
1916	1,982,385	243,678	12	1921	2,064,025	733,312	36
1917	2,584,287	166,358	6	1922	2,417,883	719,294	30
1918	2,490,760	143,455	6	1923	3,006,706	827,551	28
1919	2,271,982	378,731	17	1924	2,867,789	818,773	29
1920	4,103,982	1,069,712	26	1925	3,481,819	870,200	25

The table that follows gives the destination of the exports. It shows that in 1925 Germany was the chief importer of high-grade rock and the Netherlands ranked second. Germany's imports were about 2 per cent less in quantity and their total value was 24 per cent greater than for 1924. The quantity is lower than for any of the preceding five years, and the value also, with the exception of 1924. Exports to both the Netherlands and Belgium in 1925 showed substantial increases in both quantity and value over the previous year.

Spain was the chief importer of land pebble rock in 1925, with the Netherlands second and Japan third. Exports to Japan, Sweden, British South Africa, Italy, and Canada showed notable increases, but exports to Germany, Cuba, United Kingdom, and France showed considerable decreases. The other countries consuming land pebble rock maintained about normal imports. Exports to France have continued to decrease since 1923, as the American land pebble phosphate is largely being displaced by that from northern Africa.

Canada was the only country importing phosphate rock of other types.

Phosphate rock, ground or unground, not acidulated, exported from the United States, 1921–1925, by countries

HIGH-GRADE ROCK

Country	1921		1922		1923		1924		1925	
	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value
Belgium	41,513	$622,695	32,200	$483,000	33,650	$484,950	19,500	$292,500	28,000	$420,000
Canada	6,559	89,262	3,892	47,045	------	------	------	------	1,490	7,826
Denmark	------	------	4,400	66,000	------	------	------	------	------	------
Finland	------	------	5,650	74,759	------	------	------	------	------	------
Germany	91,880	1,293,893	113,118	1,335,372	134,586	1,700,187	92,021	1,031,819	90,374	1,284,285
Netherlands	25,100	328,900	19,991	258,021	8,140	77,720	26,494	355,195	35,221	512,465
Norway	2,500	38,500	3,200	48,000	------	------	------	------	------	------
Poland and Danzig	10,000	141,125	16,349	183,890	11,420	171,300	6,000	90,000	3,900	58,500
Spain	------	------	------	------	3,000	15,000	------	------	------	------
Sweden	------	------	3,500	52,500	------	------	6,731	44,680	------	------
United Kingdom:										
England	5,042	78,166	------	------	3,543	28,344	------	------	------	------
	182,594	2,592,541	202,300	2,548,587	194,339	2,477,501	150,746	1,814,194	158,985	2,283,076

LAND PEBBLE

Argentina	------	------	------	------	1,700	$7,650	------	------	------	------
Belgium	45,160	$389,695	53,793	$303,183	61,434	336,874	38,469	$196,636	36,731	$184,338
British South Africa	------	------	3,000	17,250	------	------	6,620	34,755	21,592	117,456
Canada	146	2,676	9,895	75,028	10,031	54,468	7,019	40,551	12,957	65,987
Cuba	7,055	43,101	9,017	26,073	23,433	83,022	33,672	156,455	5,825	31,815
Denmark	9,062	103,791	54,605	429,984	57,425	330,323	38,072	171,176	39,783	189,011
Finland	------	------	------	------	2,000	14,000	------	------	------	------
France	20,380	124,323	27,149	185,121	31,466	180,509	8,798	43,641	3,310	15,343
Germany	79,004	884,135	51,578	283,918	133,948	701,883	129,213	628,143	92,946	529,072
Greenland	------	------	------	------	3,685	16,597	------	------	------	------
Honduras	3,596	16,182	------	------	------	------	------	------	------	------
Irish Free State	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	3,300	10,725
Italy	7,352	73,520	------	------	20,915	96,540	58,419	290,391	69,927	330,373
Japan	20,743	113,799	8,201	31,804	14,225	50,081	45,733	161,423	95,245	281,401
Netherlands	69,416	558,912	86,218	498,516	67,702	337,371	97,368	472,666	100,293	475,832
Nicaragua	------	------	------	------	3,029	15,931	------	------	------	------
Norway	------	------	------	------	------	------	2,000	9,000	3,150	14,375
Poland and Danzig	------	------	------	------	3,028	20,742	13,366	70,420	10,900	69,315
Portugal	24,545	260,315	------	------	------	------	------	------	------	------
Spain	133,462	1,006,634	122,443	788,027	92,326	492,936	110,146	648,779	108,485	551,329
Sweden	17,429	200,433	17,464	108,457	10,609	62,551	12,023	64,762	61,233	294,504
United Kingdom:										
England	52,924	422,495	36,983	270,300	55,093	299,757	33,805	134,774	82,214	126,494
Ireland	36,713	289,779	18,716	141,504	20,612	94,303	3,000	9,000		
Scotland	17,438	138,085	13,715	104,014	17,904	77,468	18,282	77,393		
	544,425	4,627,875	512,777	3,269,179	630,565	3,273,006	656,005	3,209,965	697,891	3,287,370

ALL OTHER PHOSPHATE ROCK

Canada	4,931	$72,023	4,196	$38,281	1,600	$17,137	10,941	$80,246	13,324	$107,317
Cuba	1,197	23,635	------	------	------	------	81	1,427	------	------
Honduras	22	250	------	------	------	------	------	------	------	------
Japan	------	------	2	20	------	------	------	------	------	------
Mexico	110	2,975	------	------	------	------	------	------	------	------
Newfoundland and Labrador	23	463	------	------	29	228	------	------	------	------
Norway	------	------	------	------	------	------	1,000	15,000	------	------
Oceania ("Other British")	1	17	------	------	------	------	------	------	------	------
Sweden	------	------	------	------	1,006	4,024	------	------	------	------
United Kingdom (Ireland)	------	------	19	2,100	------	------	------	------	------	------
West Indies ("Other British")	9	358	------	------	12	275	------	------	------	------
	6,293	99,721	4,217	40,401	2,647	21,664	12,022	96,673	13,324	107,317

[1] Included under "United Kingdom."

The accompanying table shows, for a period of 36 years, the growth and decline of exports from Florida and the comparative importance of exports of hard rock and land pebble. It is noteworthy that in 1923 and 1924 exports of land pebble advanced while those of hard rock declined, and figures for the last four months of 1925 indicate exports of hard rock declined and land pebble advanced.

Florida phosphate rock exported, 1890–1925, in long tons[1]

Year	Hard rock	Land pebble	Year	Hard rock	Land pebble
1890	11,206		1908	631,001	470,270
1891	71,682		1909	478,820	509,341
1892	180,013		1910	461,353	606,110
1893	220,216		1911	449,798	759,510
1894	393,979		1912	470,354	732,651
1895	306,046		1913	476,898	887,398
1896	322,871		1914	287,292	663,839
1897	350,277		1915	42,283	207,551
1898	360,505		1916	31,911	208,288
1899	444,675		1917	9,341	134,943
1900	345,577	86,886	1918	62,071	64,732
1901	419,349	113,777	1919	241,151	130,974
1902	489,520	142,597	1920	344,254	685,766
1903	462,903	152,961	1921	174,284	568,415
1904	490,366	219,520	1922	198,375	519,954
1905	572,311	238,668	1923	191,222	645,036
1906	561,040	214,727	1924	145,093	660,714
1907	591,719	296,918	1925 (September–December)	46,025	253,268

[1] American Fertilizer, vol. 62, No. 3, Feb. 7, 1925, pp. 32–33; vol. 64, No. 5, March, 1926, p. 26.

EXPORTS OF SUPERPHOSPHATES AND OTHER FERTILIZER MATERIALS

The accompanying table shows the export business in superphosphates (acid phosphates) and prepared fertilizer mixtures. Exports of superphosphates increased decidedly in both quantity and value, but prepared fertilizer mixtures decreased after an increase in 1924. There was a slight increase in the quantity but a reduction in value of sulphate of ammonia exported.

Fertilizers exported from the United States, 1917–1925

	1917		1918		1919		1920		1921	
	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value
Superphosphates (acid phosphates)	3,844	$106,778	6,991	$257,928	86,790	$2,774,856	80,993	$2,949,629	4,278	$96,303
All other fertilizers	174,592	5,627,304	74,115	3,359,497	188,586	14,567,032	205,666	15,602,658	55,239	2,602,277

	1922		1923		1924		1925	
	Long tons	Value	Long tons	Value	Long tons	Value	Long tons	Value
Superphosphates (acid phosphates)	26,781	$372,279	42,099	$534,446	45,751	$588,620	65,779	$988,914
Prepared fertilizer mixtures	14,416	690,972	17,997	832,948	35,793	1,695,472	29,923	1,530,354
Nitrogenous fertilizer materials:								
Sulphate of ammonia	147,331	8,736,611	153,677	11,117,726	118,367	6,918,598	123,141	6,748,728
Calcium cyanamid (lime of nitrogen)	2,556	26,112	(1)	(1)	(1)	(1)	(1)	(1)
Other	1,663	84,274	13,291	614,814	4,699	283,154	6,802	367,435
All other fertilizers	25,462	898,061	45,073	1,921,972	44,942	1,901,722	46,509	1,985,335

[1] Not classified separately.

PHOSPHATE RESERVES OF THE UNITED STATES

G. R. Mansfield, in Mineral Resources of the United States, 1924, part 2, p. 87, has discussed the estimates of available tonnage in the United States deposits and given a description of the Government reserves of phosphate lands in Florida and the Western States. Mansfield's estimates of reserve tonnages have not been significantly affected by either new information as to resources or by depletion through production during 1925.

AMERICAN PHOSPHATE INDUSTRY

Conditions were depressed at the end of 1924. They rapidly improved in the early part of 1925, especially in the Florida pebble field, but to a less extent in the Tennessee district. Heavy stocks, particularly of the higher grades, that had accumulated at the Florida mines were soon reduced, and prices increased as the increase in demand grew. During the latter part of the year in the Florida field stocks of low-grade rock were being drawn upon and shipments were exceeding production. Some buyers were taking advantage of the prices of low-grade rock, which were rather low in comparison with the prices of higher grades. Throughout the year the hard-rock district was comparatively quiet, for, as a whole, the cost of producing hard rock is still high for present market prices.

In the Tennessee district shipments lagged during the first part of the year, much of the production went into storage, and several plants closed down. During the latter part of the year the demand increased, and nearly all of the mines and plants were busy. The increased demand for raw ground phosphate caused the chief producers of that material to run at capacity most of the year.

In the western field the larger part of the output is used locally to produce triple superphosphate or phosphoric acid, for the high freight rates to consuming centers make the marketing of ordinary superphosphate or acid phosphate unprofitable. The great increase in production in this district is largely due to the expanding operations of the Anaconda Copper Mining Co.

The Florida operators who mine all of the rock exported are feeling the effect of the stronger competition from northern Africa, and in consequence are studying the possibilities of expanding the domestic markets and competing more actively with Tennessee producers. In some respects this result may be beneficial, for it will stimulate studies and investigations leading to more efficient methods of mining and treatment, a matter in which all producers in both Florida and Tennessee seemed to be extremely interested during the past year.

DEVELOPMENTS IN MINING AND TREATMENT

No new methods of prospecting for Florida land pebble phosphate have been developed. Prospecting methods are believed to be capable of considerable improvement, as present methods generally give hardly more than a fair basis for guesswork as to the minable tonnage and its quality. In some of the deposits that have been opened

after systematic prospecting by present methods so much of the phosphatic material was soft and fine grained that the actual plant recovery was much lower than what the prospecting indicated. Florida and to a less extent Tennessee deposits are not of such character that they can be systematically prospected by diamond drilling like the western deposits, which occur in consolidated and persistent beds.

For removing overburden in the Florida field no new methods have been introduced or contemplated. Most of the overburden is stripped by hydraulic methods; steam and electric drag lines are employed for that not hydraulicked. It is said [3] that for drag lines electric power gives a lower cost per yard than steam power, mainly because operating delays are less. The long controversy between the relative merits of rheostatic control with alternating current and the direct current Ward-Leonard system for electric drive is now definitely decided in favor of the latter. The advantages of the Ward-Leonard are higher power factor, lower demand charge, better motor characteristics, and less motor trouble. The largest drag line in the field is a 320-ton machine mounted on caterpillars and equipped with a 150-foot boom and a 6-yard bucket.

All of the phosphate rock in the mine is still handled by hydraulic methods, with no better ones in sight as yet. Most of the operators realize that there is room for great improvement in the elimination of waste in mining, and that a large percentage of the phosphate rock actually in the deposits is not recovered under present methods. Considerable expenditures will probably be necessary to carry on comprehensive research on mining methods, and as yet the operators seem reluctant to meet the cost. It is believed, however, that competition will soon make clear the necessity for careful study and investigation to ascertain methods of eliminating waste and decreasing cost.

No radical changes have occurred in mining methods in the Tennessee brown-rock district. For removing overburden the larger companies are using drag-line excavators with a 1½ to 2½ cubic yard scraper bucket on a 50 to 85 foot boom. Where a phosphate bed is thick enough, its entire thickness is mined by means of a drag-line excavator; where the phosphate is too thin, or lies in narrow channels between horses of limestone, it is mined by pick and shovel. One company has used a machine resembling a traveling crane for raising hand-filled buckets from deep or narrow cuts. According to Smith,[4] steam shovels for stripping and mining, because of their limited reach, have been abandoned in favor of drag-line excavators. At one mine where conditions are favorable the overburden is stripped and the phosphate is mined by hydraulic methods similar to those used in Florida.

In the western field the method of development has progressed much beyond the early plan of surface stripping and open cut. Now the flanks of the synclines, anticlines, or monoclines are entered by

[3] Barr, James A., "A better year for phosphate rock"; Rock Products, vol. 28, Dec. 26, 1925, pp. 145–146.
[4] Smith, Richard W., "Mining and utilization of Tennessee phosphate rock"; Rock Products, vol. 28, Apr. 18, 1925, p. 59.

adits at the lowest possible point on the surface.[5] From the intersection of the adit and the phosphate beds drifts are driven along the strike, and from the drifts stopes are driven up the dip to the surface. Barr[6] says that no important changes have been incorporated in the successful washers in the Florida district. Several unusual designs and flow sheets have been tried, but were not considered successful. The standard washer now comprises these parts: (1) Rotary screen with 1 to 1½ inch round holes to separate mud balls, lime rock, and rubbish; (2) log washer to disintegrate and elutriate the clay; and (3) vibrating or shaker screen to separate the fine silica grains and to dewater. Different types of screens are being tried to find which is the least inclined to blind, for blinding is one of the main difficulties in fine screening. The size of opening in the fine screens ranges from one-thirty-second to three-sixty-fourths inch.

By present methods of washing all of the soft or colloidal phosphate, as well as the smaller particles of granular rock which pass the finer screen with the silica, is lost in the tailings and the waste water. This loss is considerable, and offers opportunities for investigation and research. Several companies are now investigating possible improvement in the recovery of fine granular phosphate and the characteristics of the finely divided phosphatic material. Some of this research covers volatilization of phosphorus by heat generated either by electricity or fuel. Jacob[7] has discussed the matter. Mansfield[8] has briefly mentioned research work under way. The Bureau of Soils, Department of Agriculture, is investigating low-temperature volatilization of phosphorus and phosphoric acid from phosphate rock. Heat processes must compete with present established methods of treatment with sulphuric acid, and sulphuric acid is often a cheap by-product of other operations of the producing concern. An additional by-product of the wet method is gypsum in the form known as synthetic gypsum. Formerly good plaster could not be made from this material, but the Rumford Chemical Co., of Providence, R. I., is now producing gypsum products from it.[9]

The increased price of fuel oil for drying rock is causing operators to give attention to powdered coal. This fuel is being tried out at one plant.

During the spring of 1925 a plant for the manufacture of phosphoric acid was put in operation at South Tampa, Fla., where Dorr counter-current equipment is used to treat low-grade phosphate rock. The resulting phosphoric acid is evaporated to 30° B. and used to acidulate a further quantity of higher-grade phosphate for the production of a 45 to 48 per cent triple superphosphate.

In the Tennessee field the washing and the preparation of the rock have been given more attention than in the Florida field, and the washers or mills are more complicated and more elaborate. During the past few years considerable progress has been made in increasing

[5] Kirkham, Virgil R. D., "Phosphate deposits of Idaho and their relation to the world supply": Trans. Am. Inst. Min. and Met. Eng., vol. 71, 1925, pp. 308–338.
[6] Barr, James A., "A better year for phosphate rock"; Rock Products, vol. 28, Dec. 26, 1925, pp. 145–146.
[7] Jacob, K. D., "Making phosphoric acid by volatilization"; Am. Fertilizer, vol. 28, Oct. 31, 1925, p. 42. Paper presented at the meeting of the American Electrochemical Society at Chattanooga, Sept. 24, 1925.
[8] Mansfield, G. R., "Phosphate rock"; Mineral Resources of the United States, 1924, pt. 2, pp. 93–95.
[9] Rock Products, "The trend of the phosphate industry"; vol. 28, Dec. 26, 1925.

recoveries.[10] One company has installed additional concentrating tables for treating the phosphate sands from its main washers. In general, research on improvements in washing is more active than that on mining, as the market is demanding improved grades of phosphate rock.

Progress in improving the grade of fertilizer to extend the marketing range has caused an increase in the manufacture of triple superphosphates, which now are being made at some of the southern plants as well as in the western field, where a high phosphorus product is necessary because of freight charges. An outline of the process used by the Anaconda Copper Mining Co., which utilizes by-product sulphuric acid from Butte ores and natural raw phosphate mined at Conda, Idaho, follows.[11] The plant is of steel construction throughout.

The phosphate rock is crushed to three-fourths inch and dried at the mine. As delivered it averages 32.5 per cent P_2O_5, combined chiefly as tricalcium phosphate, 6 per cent insoluble, 2 per cent iron and alumina, varying small amounts of alkaline chlorides, etc., and some organic matter. Upon arrival the latter is removed by calcination in a 20-foot, 6-hearth, MacDougall roaster, fired with coal, resulting in a shrinkage of 7 per cent and an increase of P_2O_5 to 35 per cent. The calcined rock is next crushed in two 8-foot Hardinge mills and delivered to a Newago screen yielding a product of which 80 to 83 per cent is finer than 100 mesh and 3 to 5 per cent coarser than 60 mesh.

Acidulation of the rock with an equal weight of 60° B. sulphuric acid is done in three Dorr agitators in series. In addition to the central air lift, six air jets at the periphery are used to assist the agitation supplied by the rotator. Rock is fed into the first agitator at 2½ to 3 tons per hour, and the reaction is complete by the time the pulp overflows the last agitator, carrying phosphoric acid equivalent to 24 per cent P_2O_5, together with a residue of calcium sulphate.

Clarification of the acid liquor is done in three Dorr settlers with countercurrent flow. The residue from the last settler is filtered on an Oliver, washed and discarded, while the overflow from the first settler, carrying 19 per cent P_2O_5, is concentrated in two brick-packed evaporating towers heated by coal fires.

The concentrated phosphoric acid is then mixed with 1-ton batches of calcined and crushed rock in such proportion as to yield a product carrying 51 to 52 per cent total P_2O_5 and 21 per cent moisture. The mixture is then dried to about 3 per cent moisture in a coal-fired furnace, recrushed in a Sturtevant ring-roll mill, and sacked in 125-pound bags.

J. J. Gray, jr. (now (1926) Tennessee Products Corporation), producer of ferrophosphorus at the Rockdale furnace, is reported to have made extensive improvements in his blast-furnace plant at Rockdale, Tenn. The Rockdale furnace is an important consumer of high-grade lump phosphate rock.

NEW USES FOR PHOSPHATE ROCK

Most of the phosphate rock produced is used for fertilizer and the larger part of the output will probably continue to be so used. No new uses of major importance have materialized during the past year, but some minor ones have indicated possibilities.

In Florida during the period of low prices a few thousand tons were used for concrete aggregate and sand in building operations,

[10] Smith, R. W. "Mining and marketing of Tennessee blue phosphate rock"; Rock Products, vol. 28, Oct. 3, 1925, p. 73; "Mining and utilization of Tennessee phosphate rock"; Rock Products, vol. 28, Apr. 18, 1925, p. 59.

[11] Mining and Metallurgy, "Anaconda superphosphate"; October, 1924, p. 496.

and according to report for such use some of the rock brought a price better than the market prices for phosphate rock.

According to a report from Consul Leland L. Smith, Tunis, "A shipment of 6,000 tons of raw phosphates from the Kalaa-Djerba mine in Tunisia was made to Netherlands during December, 1925. The mineral is to be pressed into blocks to be used instead of the usual fire bricks. It is reported that phosphate bricks have demonstrated excellent heat-resisting qualities and have proved to be economical." In the United States there has been some interest in similar uses for phosphates, but no actual consumption as far as known. However, this seems to have possibilities, for the raw material could be procured for about the same price as a good grade of fire clay, and under certain conditions the calcium phosphate might prove a good refractory.

AMERICAN EXPORT SITUATION

EUROPEAN MARKETS

Europe has always been and will be for many years the principal market for phosphate rock exported from this country; consequently, when the phosphate business in Europe is depressed exports of American rock are curtailed.

The chief competitors of American phosphate in Europe are the mines in Algeria, Tunisia, and Morocco. The Algerian and Tunisian mines produce phosphates that range from the 58 to 63 per cent grade up to the 65 to 70 per cent grade; Moroccan phosphate averages well over 75 per cent tricalcium phosphate and less than 1 per cent combined iron and alumina. The Moroccan phosphate evidently is of excellent quality, and it is a strong competitor of high-grade Florida rock.

During 1925 the combined production of the North African districts was 4,226,804 metric tons; in 1921 the combined production amounted to 2,231,800 metric tons. In five years the production has almost doubled. The greatest percentage increase has been in Morocco and Algeria.

Rapid increase of output by the Algerian and Tunisian mines has resulted in more low-grade phosphate being produced than the European demands. This overproduction, combined with the low exchange value of the franc, has depressed prices until Florida pebble of equal grade can not compete. Meantime, the high-grade Moroccan rock has been and is a strong competitor of the high-grade Florida phosphate. The table (p. 153) entitled "Phosphate rock sold or used by producers in and exported from the United States, 1916–1925," shows how this increasing competition affects American exports.

The following figures, compiled by the Phosphate Export Association, give the European consumption of phosphates in long tons for 1913 and for 1921 to 1925, according to sources:

European consumption of phosphates, 1913 and 1921–1925

	1913		1921		1922	
	Long tons	Per cent of total	Long tons	Per cent of total	Long tons	Per cent of total
Low grades:						
Tunisian and Algerian	2,353,578	53¼	1,763,345	61¼	2,562,094	69¾
Florida pebble	615,105	14	93,073	3¼	108,358	3
Egyptian	5,721		59,678	2¼	13,188	¼
Local	390,372	8¾	165,924	5¾	175,600	4¾
	3,364,776	76	2,082,020	72½	2,859,240	77¾
High grades:						
Florida pebble	205,037	4¾	423,994	15	385,718	10½
Florida hard rock	482,898	11	174,284	6	201,375	5½
Tennessee	8,398	¼				
Morocco			8,232	¼	80,549	2¼
Curaçao and Pacific	335,707	7½	156,111	5½	129,240	3½
Local	21,600	½	22,000	¾	20,000	½
	1,053,640	24	784,621	27½	816,882	22¼
Total consumption	4,418,416	100	2,866,641	100	3,676,122	100
Total American phosphates	1,311,438	29¾	691,351	24¼	695,451	19

	1923		1924		1925	
	Long tons	Per cent of total	Long tons	Per cent of total	Long tons	Per cent of total
Low grades:						
Tunisian and Algerian	2,834,635	68	3,198,676	68	3,346,504	64
Florida pebble	195,785	4¾	185,638	4	92,631	1¾
Egyptian	41,360	1	39,519	¾	38,051	¾
Local	147,000	3½	151,500	3¼	250,000	4¾
	3,218,780	77¼	3,575,333	76	3,727,186	71¼
High grades:						
Florida pebble	402,343	9¾	394,105	8¼	464,701	9
Florida hard rock	190,222	4½	145,093	3	149,870	2¾
Morocco	190,632	4½	430,003	9¼	721,227	13¾
Curacao and Pacific	149,191	3½	148,792	3¼	159,600	3
Local	22,300	½	10,000	¼	16,000	¼
	954,688	22¾	1,127,993	24	1,511,398	28¾
Total consumption	4,173,468	100	4,703,326	100	5,238,584	100
Total American phosphates	788,350	19	724,836	15¼	707,202	13½

JAPANESE MARKETS

There was a good demand during 1925 from Japan for the lower grades of Florida pebble, averaging 66 to 68 per cent B. P. L. Exports to Japan were 45,733 long tons in 1924 and 95,245 tons in 1925, an increase of over 100 per cent. Outside of Europe Japan is the largest single consumer of American phosphate, and will probably continue to be a good customer for the lower grades of Florida pebble. There is little likelihood, however, that Florida high-grade pebble or hard rock can compete in Japan with high-grade Pacific phosphates that are much nearer.

OTHER MARKETS

Keen competition in Europe will probably stimulate the search for other foreign markets for American phosphate, and there seems to be a possibility of increasing exports to Central America and the West Indies by converting the phosphate rock to acid phosphate or triple superphosphate before shipment. Sources of sulphuric acid are near the deposits of rock, and higher transportation charges might be offset by shipment of a higher-grade product.

WORLD'S PRODUCTION AND CONDITIONS

Before 1914 the world's production of phosphate rock had risen to more than 7,000,000 metric tons. Disturbed economic conditions caused production to decline during the war period, 1914 to 1919. In 1923 the pre-war production was again reached, and in 1924 the production was possibly 1,000,000 tons more than the pre-war output. Total figures for 1925 are not yet available, but there is reason to expect that they will largely exceed the production for 1924, in view of the increased consumption in some of the important markets.

The United States is still the largest producer, with Tunisia second. The combined output of Tunisia, Algeria, and Morocco in 1925 was 4,226,804 metric tons; the United States output was 3,537,702 metric tons. Ocean and Nauru Islands reported an increase of about 19,000 metric tons over the 1924 figures. Figures for 1925 for many of the other producing countries are not yet available. Notwithstanding the recent rapid increase of production in North Africa, further increases there are probable because of the proximity of the fields to the important European centers of consumption.

The rapid advance in the Tunisian production is considered as having been secured at the expense of price concessions, due to the force of competition from Algeria and Morocco. The Moroccan production will probably eventually be the most serious competitor not only with Tunisia but with the United States, since the quality of the Moroccan rock is much higher than that obtainable in Tunisia and can successfully compete with high-grade Florida rock in the European market. Attempts have been made[12] in the recent past by the Tunisian, Algerian, and Moroccan operators to come to some understanding, but so far no agreement has been reached with regard to markets or price.

The controlling organization in Morocco has been working toward the reduction of handling and transportation costs. The production of superphosphate on the ground, with the exportation of superphosphate rather than raw phosphate, is being seriously considered, as this higher-grade product can more easily support the freight rates than the raw product. A superphosphate plant has already been erected and in operation for the past year and a half. Various estimates have been made of the North African and Moroccan reserves. Mansfield[13] states that the Moroccan deposits represent

[12] American Fertilizer, "Survey of the world position in phosphate rock"; vol. 64, Feb. 20, 1926, p. 33.
[13] Mansfield, F. M., "French mines active"; Eng. and Min. Jour.-Press, vol. 121, Apr. 10, 1926, p. 619.

a reserve of 25,000,000,000 tons. MacDowell[14] states that Moroccan reserves are estimated to contain in excess of 15,000,000,000 tons.

Production in other fields throughout the world has not varied much for the past two years. The production of Ocean and Nauru Islands is consumed mostly in Australia and New Zealand.

There has been a general trend upward in European consumption. American exporters, however, have not benefited from this to the full extent because of the general decline in the use of American phosphates in Europe. Indications are that in time North African phosphate will largely displace American in European markets. At the same time consumption in the United States should correspondingly increase and take care of the present surplus for export.

The following table, prepared by L. M. Jones, of the Bureau of Mines, shows the world's production of phosphate rock for the last five years:

World's production of phosphate rock, 1921–1925, by countries, in metric tons

Country	1921	1922	1923	1924	1925
Algeria	398,800	484,304	467,384	681,136	815,116
Angaur Island	[1] 30,500	46,204	61,243	[2]	[2]
Australia:					
New South Wales	203	12	75	109	203
Queensland	375	66			
South Australia	5,161	2,759	453	85	754
Victoria	1,566	1,114	488	541	
Belgium	55,040	56,840	23,270	26,250	[2]
Canada [3]	27	172	27		15
Chile [3]	1,200	500	[2]		
Christmas Island (Straits Settlements) [4]	87,893	100,947	71,563	127,166	[2]
Dutch West Indies: Curaçao [4]	60,872	50,078	85,855	100,471	81,771
Egypt	122,024	60,220	25,370	87,869	[2]
France	111,984	146,526	179,462	[2]	[2]
Germany: [3]					
Bavaria	7,959	4,412	2,975	1,000	200
Prussia	925	657	2,311	399	123
Gilbert and Ellis Islands [5]	[2]	152,368	136,506	192,516	[2]
India (British)	[3] 353	1,362	4,838	6,529	[2]
Indo-China	9,900	7,600	9,847	12,461	14,474
Japan	32,001	12,320	33,107	85,617	[2]
Taiwan	18	[2]	[2]	[2]	[2]
Madagascar [4]		5,210		749	
Makatea Island	60,000	71,350	74,230	89,611	[2]
Morocco, French	33,000	96,397	225,395	461,582	[4] 720,688
New Caledonia	5,000	5,142	12,932	[2]	12,000
New Zealand	6,108	3,178	2,421	1,600	
Norway [3]	1,068		222	345	467
Ocean and Nauru Islands	[5] 370,000	[5] 367,000	[5] 316,652	[5] 459,162	[5] 478,278
Portugal	1,054	[2]	[2]	[2]	[2]
Russia	[2]	14,136	21,044	20,014	[2]
Spain	38,064	6,492	5,397	6,746	5,315
Tunisia	1,800,000	2,117,650	2,357,000	2,391,000	2,691,000
United States	2,097,153	2,456,690	3,054,964	2,913,817	3,537,702

[1] Estimated.
[2] Data not available.
[3] Apatite.
[4] Exports.
[5] Exports during the fiscal year ended June 30 of year stated.
[6] Production in the fiscal year ended June 30 of year stated.

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GYPSUM

By Jefferson Middleton

PRODUCTION

The quantity of gypsum mined in the United States during 1925 was 5,678,302 short tons, the largest output ever recorded. It exceeded that of 1924 by 635,673 tons, or 13 per cent. The value of the crude and calcined gypsum sold by producers during the year was $47,577,240, an increase of $4,852,733, or 11 per cent, as compared with 1924. Of the total quantity mined, 1,014,135 tons, or 18 per cent, was sold crude, the Portland cement mills taking 979,154 tons, or 97 per cent of the total sold crude, and using it as a retarder in the manufacture of their product. The value of the gypsum sold crude in 1925 was $2,823,229, or $2.78 a ton, an increase of $148,909, or 6 per cent, over 1924; the value of that sold calcined in 1925 was $44,754,011, or $10.93 a ton. Four States—Kansas, Michigan, Nevada, and New York—showed increases in the amount of gypsum sold crude: Kansas, 11 per cent; Michigan, 26 per cent; Nevada, 7 per cent; and New York, 6 per cent. Iowa, Ohio, and Oklahoma showed decreases. New York is the largest producer of gypsum. The production of crude gypsum in that State in 1925 was 1,730,254 short tons (30 per cent of the entire output), an increase of 17 per cent compared with 1924. New York was also the largest seller of crude and calcined gypsum, 354,394 tons of the former (or 35 per cent of the total) and 1,185,142 tons of the latter (or 29 per cent of the total) being sold by producers in New York in 1925. These were considerable increases over 1924. Other important States in the production of crude gypsum were: Iowa, 800,167 tons; Michigan, 649,053 tons; Texas, 558,132 tons; and Ohio, 551,479 tons. These five States reported nearly 76 per cent of the total.

The quantity of crude sold by producers as agricultural gypsum in 1925 was 26,001 tons, as compared with 22,298 tons in 1924, an increase of 3,703 tons, or 17 per cent.

The quantity of Keenes cement sold by producers in 1925 was 36,607 tons, valued at $503,397, an increase of 5,987 tons and $74,713, or 20 per cent in quantity and 17 per cent in value, compared with 1924. The average value a ton in 1925 was $13.75, a decrease of 25 cents.

Plaster board, tile, and blocks were made in 16 States at plants operated by the firms mining the gypsum used in these products. Plants of firms that make these products but do not mine gypsum are not included here, because the gypsum they use is already accounted for as plaster sold by the original manufacturers. The figures given for boards and blocks therefore do not include the entire output of these articles in the United States. The figures of production as furnished by the operators do not actually represent

the exact weight of the gypsum used in the several products, but include the weight of the other materials used, such as chemicals in Keenes cement, and felt, sawdust, paper, and fiber in other products. Sales of wall board increased 8 per cent in quantity and 7 per cent in value in 1925. The average value a ton decreased slightly, from $32.85 in 1924 to $32.66 in 1925. Sales of partition tile increased 102 per cent in quantity and 70 per cent in value. The average value per ton decreased from $12.27 in 1924 to $10.34 in 1925. Sales of plaster board also showed a favorable increase—29 per cent in quantity and 44 per cent in value.

Gypsum mined and crude and calcined gypsum sold by producers in the United States, 1916–1925

Year	Number of active plants	Total quantity mined (short tons)	Sold without calcining		Sold calcined		Total value of sales
			Short tons	Value	Short tons	Value	
1916	65	2,757,730	547,119	$790,430	1,805,814	$7,168,602	$7,959,032
1917	59	2,696,226	623,995	1,124,370	1,677,390	9,992,082	11,116,452
1918	57	2,057,015	470,192	1,236,552	1,328,269	10,234,302	11,470,854
1919	57	2,420,163	510,245	1,518,203	1,596,020	14,209,704	15,727,907
1920	61	3,129,142	669,260	2,565,195	1,904,484	21,967,870	24,533,065
1921	62	2,890,784	642,944	2,266,011	1,796,851	21,434,279	23,700,290
1922	64	3,779,949	770,725	2,443,346	2,491,265	26,917,805	29,361,151
1923	62	4,753,448	847,242	2,577,436	3,101,378	32,310,719	34,888,155
1924	72	5,042,629	982,108	2,674,320	3,568,569	40,050,187	42,724,507
1925	61	5,678,302	1,014,135	2,823,229	4,096,357	44,754,011	47,577,240

Gypsum mined and crude and calcined gypsum sold by producers in the United States, 1924–25, by States

State	Number of active plants	Total quantity mined (short tons)	Sold without calcining [1]		Sold calcined		Total value of sales
			Short tons	Value	Short tons	Value	
1924							
Iowa	6	727,385	151,208	$379,429	489,745	$5,277,910	$5,657,339
Kansas	3	141,908	47,519	116,750	77,796	777,512	894,262
Michigan	8	577,526	124,134	324,140	453,135	5,626,682	5,950,822
Nevada	6	365,714	29,441	61,959	278,467	2,001,130	2,063,089
New York	13	1,474,491	335,841	982,777	1,019,319	13,346,469	14,329,246
Ohio	4	525,485	19,332	56,186	477,845	5,563,913	5,620,099
Oklahoma	5	316,134	64,980	157,748	201,762	2,442,333	2,600,081
Texas	7	402,245	32,245	62,374	301,512	2,566,736	2,629,110
Utah	4	90,221	35,298	43,335	43,590	292,253	335,588
Wyoming	3	32,715	188	473	25,095	189,871	190,344
Other States [2]	13	388,805	141,922	489,149	200,303	1,965,378	2,454,527
	72	5,042,629	982,108	2,674,320	3,568,569	40,050,187	42,724,507
1925							
Iowa	7	800,167	140,451	381,584	562,210	6,352,687	6,734,271
Kansas	3	166,952	52,869	126,886	87,656	882,624	1,009,510
Michigan	5	649,053	155,961	391,093	477,076	5,056,201	5,447,294
Nevada	6	350,130	31,471	57,073	259,693	1,664,736	1,721,809
New York	9	1,730,254	354,394	1,017,403	1,185,142	15,202,503	16,219,906
Ohio	3	551,479	11,423	32,818	540,504	6,361,314	6,394,132
Oklahoma	4	320,931	[3]	[3]	[3]	[3]	2,599,463
Texas	6	558,132	[3]	[3]	[3]	[3]	3,721,954
Other States [2]	18	551,204	[4] 267,566	[4] 816,372	[4] 984,076	[4] 9,233,946	3,728,901
	61	5,678,302	1,014,135	2,823,229	4,096,357	44,754,011	47,577,240

[1] Includes agricultural gypsum as follows: 1924, 22,298 tons, valued at $125,612; 1925, 26,001 tons, valued at $153,902.

[2] 1924: Arizona, California, Colorado, Montana, New Mexico, Oregon, South Dakota, and Virginia; 1925: Arizona, California, Colorado, Montana, New Mexico, Oregon, South Dakota, Utah, Virginia, Washington, and Wyoming.

[3] Included under "Other States."

[4] This figure includes also sales from Oklahoma and Texas.

Gypsum sold by producers in the United States, 1924–25, by uses

	1924		1925	
	Short tons	Value	Short tons	Value
Calcined:				
Stucco	600, 955	$3, 849, 971	634, 714	$3, 930, 714
Neat plaster	1, 712, 589	13, 895, 969	2, 187, 721	16, 737, 733
Sanded plaster	166, 910	1, 179, 826	184, 850	1, 331, 784
Mixed plaster	[1] 193, 635	[1] 1, 534, 836		
Plaster of Paris, molding, casting plaster, etc	[2] 193, 971	[2] 1, 903, 493	[2] 187, 058	[2] 1, 888, 941
Keenes cement	30, 629	428, 684	36, 607	503, 397
To plate-glass works	18, 847	138, 444	19, 536	148, 398
Plaster board	86, 018	1, 924, 394	110, 703	2, 766, 079
Wall board	391, 457	12, 859, 411	422, 863	13, 812, 230
Partition tile	121, 604	1, 492, 550	245, 853	2, 542, 228
Special tile or blocks	23, 457	345, 847	8, 654	97, 408
Other purposes [3]	28, 506	496, 762	57, 798	995, 099
	3, 568, 569	40, 050, 187	4, 096, 357	44, 754, 011
Crude	982, 108	2, 674, 320	1, 014, 135	2, 823, 229
		42, 724, 507		47, 577, 240

[1] Includes small quantity of wood fiber plaster.
[2] Includes dental plaster.
[3] Includes gypsum sold to cement mills, for roof tile, for insulating purposes, for fireproofing, etc.

Keenes cement sold by producers in the United States, 1916–1925

Year	Manufacturers	Short tons	Value	Year	Manufacturers	Short tons	Value
1916	5	20, 358	$190, 585	1921	7	14, 430	$232, 457
1917	3	15, 976	167, 191	1922	6	21, 991	324, 316
1918	5	12, 823	151, 802	1923	5	23, 273	323, 127
1919	6	15, 395	200, 360	1924	6	30, 620	428, 684
1920	6	16, 542	246, 433	1925	5	36, 607	503, 397

IMPORTS AND EXPORTS [1]

Seven companies in the gypsum industry reported to the Bureau of Mines that they imported gypsum in 1925. They were the Connecticut Adamant Plaster Co., Higginson Manufacturing Co., Newark Plaster Co., Rock Plaster Corporation, Charles W. Priddy & Co. (Inc.), Standard Gypsum Co., and the United States Gypsum Co. Of the gypsum imported (as reported by these companies), more than 23,000 tons was sold crude, while more than 498,000 tons was sold calcined and was used mainly in the manufacture of gypsum plasters. The value of the imported gypsum sold crude or in manufactured form by these seven firms in 1925 was more than $5,800,000, in comparison with a business of $47,600,000 in domestic gypsum by all producers.

As a large part of the Canadian output is imported into the United States and is a chief source of supply for the eastern seaboard States, the following table is of interest:

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Gypsum produced and sold in Canada, 1916–1925[1]

[Figures include lump, crushed, fine ground, and calcined gypsum]

Year	Short tons	Value	Year	Short tons	Value
1916	342,915	$738,593	1921	386,550	$1,785,538
1917	336,332	881,984	1922	559,265	2,160,898
1918	152,287	823,006	1923	578,301	2,243,100
1919	299,063	1,215,287	1924	646,016	2,208,108
1920	429,144	1,893,991	1925	740,323	2,389,891

[1] Dominion Bur. Statistics.

Gypsum imported for consumption in the United States, 1916–1925

Year	Crude		Ground or calcined		Manufactured plaster of Paris	Keenes cement		Total value
	Short tons	Value	Short tons	Value		Short tons	Value	
1916	254,131	$275,043	11,706	$72,345	$9,085	600	$9,890	$366,363
1917	240,269	265,504	16,533	109,732	6,016	484	8,003	389,255
1918	50,653	55,004	6,117	70,028	1,765	111	2,259	129,056
1919	171,733	211,946	10,415	126,405	7,719	187	5,984	352,054
1920	282,486	397,942	14,921	179,191	10,282	202	5,338	592,753
1921	266,796	364,318	4,495	55,109	33,072	184	6,836	459,335
1922	409,475	523,939	1,774	32,651	55,116	403	9,636	621,342
1923	448,129	629,203	5,133	77,716	41,317	418	11,543	759,779
1924	519,627	724,864	5,217	70,793	48,059	539	12,042	855,758
1925	634,423	915,888	10,759	140,941	56,724	449	11,294	1,124,847

Gypsum, crude, imported into the United States, 1924–25, by countries

[General imports]

Country	1924		1925	
	Short tons	Value	Short tons	Value
Algeria and Tunisia			4	$9
Australia	2,576	$2,300		
Canada	516,991	721,604	617,866	879,477
Cuba			1	5
France	28	334	1,092	1,621
Germany	2	8		
Hongkong	10	165	6	95
Mexico			14,858	33,360
United Kingdom	20	453	596	1,321
	519,627	724,864	634,423	915,888

Exports of gypsum are designated as "gypsum or plaster, crude, ground, calcined, and manufactures of," and have been as follows: 1925, 16,798 short tons, valued at $498,616; 1924, 10,623 tons, $358,425; 1923, 8,815 tons, $226,423; 1922, 7,673 tons, $178,166. Exports are not separately classified for earlier years.

MANUFACTURERS AND MINERS

MANUFACTURERS OF GYPSUM PLASTER

HEAD OFFICES

American Gypsum Co., Port Clinton, Ohio.
Arizona Gypsum Plaster Co., Douglas, Ariz.
Beaver Products Co. (Inc.), Buffalo, N. Y.
Best Bros. Keenes Cement Co., Medicine Lodge, Kans.
Blue Diamond Co., 2200 East Sixteenth Street, Los Angeles, Calif.
Cardiff Gypsum Plaster Co., 903 Central Avenue, Fort Dodge, Iowa.
Centerville Gypsum Co., Centerville, Iowa.
Certain-teed Products Corporation, 100 East Forty-second Street, New York, N. Y.
Colorado Portland Cement Co., Ideal Building, Denver, Colo.
Connecticut Adamant Plaster Co. (importer), New Haven, Conn.
Dakota Plaster Co., Rapid City, S. Dak.
Ebsary Gypsum Co. (Inc.), Scottsville, N. Y.
Empire Gypsum Co., 319 Cutler Building, Rochester, N. Y.
Grand Rapids Gypsum Co., Grand Rapids, Mich.
Grand Rapids Plaster Co., 1204 Grand Rapids Savings Bank Building, Grand Rapids, Mich.
Higginson Manufacturing Co. (importer), Newburgh, N. Y.
Jumbo Plaster & Cement Co., Sigurd, Utah.
Lycoming Calcining Co., 120 West Fourth Street, Williamsport, Pa.
Michigan Gypsum Co., Grand Rapids, Mich.
Nephi Plaster & Manufacturing Co., 907 Continental Bank Building, Salt Lake City, Utah.
Newark Plaster Co. (importer), 30 Church Street, New York, N. Y.
Niagara Gypsum Co., 597 Michigan Street, Buffalo, N. Y.
Northwest Gypsum Products Co., Lewistown, Mont.
Oakfield Gypsum Products Corporation, Oakfield, N. Y.
Overland Cement Plaster Co., Laramie, Wyo.
Pacific Portland Cement Co., Consolidated, Pacific Building, San Francisco, Calif.
Rock Plaster Corporation (importer), 40 Rector Street, New York, N. Y.
Southern Gypsum Co. (Inc.), North Holston, Va.
Standard Gypsum Co. (Inc.), 305 Sharon Building, San Francisco, Calif.
Texas Cement Plaster Co., 406 Continental Building, Oklahoma City, Okla.
Three Forks Portland Cement Co., Ideal Building, Denver, Colo.
United States Gypsum Co., 205 West Monroe Street, Chicago, Ill.
Universal Gypsum Co., 1153 Conway Building, Chicago, Ill.
Universal Gypsum Company of Texas, 1153 Conway Building, Chicago, Ill.
Wasem Plaster Co., Warden Apartments, Fort Dodge, Iowa.

MANUFACTURERS OF GYPSUM PLASTER WHO OPERATE MORE THAN ONE PLANT

Beaver Products Co. (Inc.), Fort Dodge, Iowa.; Blue Rapids, Kans.; Grand Rapids, Mich.; Akron, N. Y.; Gypsum, Ohio; Acme, Tex.
Certain-teed Products Corporation, Grand Rapids, Mich.; Acme, N. Mex.; Acme, Okla.; Gypsum, Oreg.; Acme, Tex.; Laramie, Wyo.
Colorado Portland Cement Co., Portland, Colo.; Hanover, Mont.
Grand Rapids Plaster Co., Grand Rapids and Grandville, Mich.
Pacific Portland Cement Co., Consolidated, Plaster City, Calif.; Empire Nev.
Standard Gypsum Co. (Inc.), Long Beach, Calif.; Ludwig, Nev.; Seattle, Wash.
United States Gypsum Co., Amboy, Calif.; Loveland, Colo.; Fort Dodge, Iowa; Blue Rapids, Kans.; Alabaster, Detroit, and Grand Rapids, Mich.; Arden, Nev.; Buffalo and Oakfield, N. Y.; Cleveland and Gypsum, Ohio; Eldorado and Southard, Okla.; Piedmont, S. Dak.; Sweetwater, Tex.; Plasterco, Va.
Universal Gypsum Co., Fort Dodge, Iowa; Akron, N. Y.

MANUFACTURERS OF KEENES CEMENT

Best Bros. Keenes Cement Co., Medicine Lodge, Kans.
Certain-teed Products Corporation, 100 East Forty-second Street, New York, N. Y.
Nephi Plaster & Manufacturing Co., 907 Continental Bank Building, Salt Lake City, Utah.
Texas Cement Plaster Co., 406 Continental Building, Oklahoma City, Okla.
United States Gypsum Co., 205 West Monroe Street, Chicago, Ill.

MANUFACTURERS OF GYPSUM PLASTER BOARD AND WALL BOARD

American Gypsum Co., Port Clinton, Ohio.
Beaver Products Co. (Inc.), Buffalo, N. Y.
Bell, W. H., Co., 2582 Park Avenue, New York, N. Y.
Buttonlath Manufacturing Co., Vernon and Boyle Avenues, Los Angeles, Calif.
Duffy, J. P., Co., Fifty-first Street and Second Avenue, Brooklyn, N. Y.
Gypsite Fireproofing Co., 2034 Dime Bank Building, Detroit, Mich.
Gypsolite Co. (Inc.), 1153 Conway Building, Chicago, Ill.
Hercules Plaster Board Co., Hampton, Va.
Kelley Plaster & Plaster Board Co., 261 Central Avenue, Passaic, N. J.
Key-Hold Lath Co., 148 Hooper Street, San Francisco, Calif.
New Jersey Adamant Manufacturing Co., 79 Passaic Avenue, East Newark, N. J.
Niagara Gypsum Co., 597 Michigan Street, Buffalo, N. Y.
Rader, Gustav, Co., 1105 Metropolitan Avenue, Brooklyn, N. Y.
Reeb, M. A., Corporation, 597 Michigan Avenue, Buffalo, N. Y.
Rock Plaster Corporation (importer), 40 Rector Street, New York, N. Y.
Rockwood Corporation, St. Louis, Mo.
Schumacher Wall Board Co., 5802 South San Pedro Avenue, Los Angeles, Calif.
Southern Gypsum Co. (Inc.), North Holston, Va.
Texas Cement Plaster Co., 406 Continental Building, Oklahoma City, Okla.
United States Gypsum Co., 205 West Monroe Street, Chicago, Ill.
Universal Gypsum Co., 1153 Conway Building, Chicago, Ill.

MANUFACTURERS OF GYPSUM BLOCK AND TILE

American Gypsum Co., Port Clinton, Ohio.
Arizona Gypsum Plaster Co., Douglas, Ariz.
Beaver Products Co. (Inc.), Buffalo, N. Y.
Centerville Gypsum Co., Centerville, Iowa.
Certain-teed Products Corporation, 100 East Forty-second Street, New York, N. Y.
Dakota Plaster Co., Rapid City, S. Dak.
Ebsary Gypsum Co. (Inc.), Scottsville, N. Y.
Niagara Gypsum Co., 597 Michigan Street, Buffalo, N. Y.
Northwest Gypsum Products Co., Lewistown, Mont.
Pacific Portland Cement Co., Consolidated, Pacific Building, San Francisco, Calif.
Southern Gypsum Co. (Inc.), North Holston, Va.
Texas Cement Plaster Co., 406 Continental Building, Oklahoma City, Okla.
United States Gypsum Co., 205 West Monroe Street, Chicago, Ill.
Universal Gypsum Co., 1153 Conway Building, Chicago, Ill.
Wasem Plaster Co., Warden Apartments, Fort Dodge, Iowa.

MINERS

[Gypsum sold crude only]

Hawkeye Gypsum Products Co., Fort Dodge, Iowa.
Oklahoma Portland Cement Co., 507 Ideal Building, Denver, Colo.
Phoenix Gypsum Co. (Inc.), Basom, N. Y.
Regan Bros., Mason, Nev.
Smith, C. W., P. O. Box 74, Oroville, Wash.

ABRASIVE MATERIALS

By Frank J. Katz [1]

INTRODUCTION

The production of natural abrasive materials is a varied industry in which a considerable number of widely scattered dissimilar enterprises are engaged in placing different commodities on the markets. By present-day standards in mining and manufacturing few, if any, of these enterprises would be considered large. Nevertheless, individually as well collectively, they are important elements in the industrial life of the country, inasmuch as they supply tools for grinding, polishing, and other abrasive operations and the ingredients of cleansing compounds, without which the great wood, leather, and metal working and other industries and many householders would be put to great expense and inconvenience in the use of substitutes.

This chapter considers mineral products which as such or as essential constituents of manufactured products are used as abrasive materials. Some of these mineral products are used in other ways also—for example, tripoli as a filler and diatomaceous earth for thermal insulation. With these minerals segregation of production according to uses is difficult, but the total production for all uses is shown in this report. Feldspar and quartz, both of which are used as abrasives, are excluded from this report because that is not their principal use and because precise separation of the statistics according to uses is impossible. Therefore they are considered in other chapters of Mineral Resources, entitled "Feldspar" and "Silica."

Statistics on artificial abrasives are included for comparison and because of their strong influence on the marketing of natural abrasives.

NATURAL ABRASIVES

Under the head of natural abrasives in this report are included millstones and related quarry products, such as chasers, dragstones, and paving stone for chaser mills; grindstones and pulpstones; oilstones, whetstones, hones, scythestones, and rubbing stones; corundum and emery; abrasive garnet; tripoli; diatomaceous earth; pumice; and pebbles and lining for tube mills. These natural abrasives were produced in 1925 in 24 States, as follows:

Arkansas	Oilstones and scythestones.
California	Diatomaceous earth, grinding pebbles, and pumice.
Illinois	Tripoli.
Indiana	Rubbing stones and whetstones.

[1] Figures on production were compiled by Miss A. T. Coons and Miss B. H. Stoddard, of the Bureau of Mines. Data on imports and exports were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Kansas	Pumice.
Kentucky	Whetstones.
Michigan	Grindstones.
Minnesota	Grinding pebbles and tube-mill lining.
Missouri	Tripoli.
Nebraska	Pumice.
Nevada	Diatomaceous earth.
New Hampshire	Diatomaceous earth, garnet, millstones, and scythestones.
New York	Diatomaceous earth, emery, garnet, and millstones.
North Carolina	Millstones.
Ohio	Grindstones, pulpstones, rubbing stones, scythestones, and whetstones.
Oklahoma	Tripoli.
Oregon	Diatomaceous earth.
Pennsylvania	Rottenstone.
South Dakota	Tube-mill lining.
Tennessee	Tripoli.
Vermont	Scythestones.
Virginia	Millstones.
Washington	Diatomaceous earth and pulpstones.
West Virginia	Grindstones and pulpstones.

MILLSTONES

The value of the millstones or burrstones and related quarry products—chasers, dragstones, and pavers—sold by producers in the United States in 1925 was $22,490. This was one-fourth less than the value in 1924 but approximately the same as that in 1923. During the past five years Ulster County, N. Y., has been the principal source of output, and the largest number of producers reported from that region.

American millstones have been and are still for the most part made of quartz sandstone and conglomerate, chiefly in Ulster County, N. Y., and Montgomery County, Va., but also in Pennsylvania. Millstones are also made of granite, particularly in Alabama, Maine, Minnesota, New Hampshire, and North Carolina. The production recorded in Mineral Resources includes only the stones made for other than purely local use. Doubtless a large number of stones have been made in many unrecorded localities as local use has required, and they have been made of other rocks than those specified, particularly in the mountain sections of the Southern States. Formerly the millstone manufacturing industry was much larger than at present. About 1880 the total value of the stones produced and sold in the United States was around $200,000 annually. The production has declined since the late eighties and during the last five years has been from $20,000 to $30,000 worth of stones annually. The decline is due in part to the fact that the manufacture of millstones is a handcraft in which, as in many others in the United States, the old master craftsmen, who are gradually disappearing, are not being replaced. In part, also, the change is due to new processes in the grain, paint, and mineral milling industries in which the old-style burrstones and chaser mills are being supplanted by grinding equipment of an entirely different type.

Value of millstones, chasers, and dragstones sold by producers in the United States, 1916–1925

Year	New York		Other States [1]		Total	
	Producers	Value	Producers	Value	Producers	Value
1916	10	$10,287	10	$34,272	20	$44,559
1917	10	22,103	8	21,386	18	43,489
1918	14	25,488	13	67,026	27	92,514
1919	7	10,155	11	56,817	18	66,972
1920	8	13,331	11	49,994	19	63,325
1921	12	14,672	7	9,852	19	24,524
1922	12	17,025	4	3,828	16	20,853
1923	17	14,344	4	7,885	21	22,229
1924	17	18,215	5	11,910	22	30,125
1925	13	14,063	5	8,427	18	22,490

[1] 1916, 1917, and 1919: Alabama, North Carolina, Pennsylvania, and Virginia; 1918: Maryland, North Carolina, Pennsylvania, and Virginia; 1920: Alabama, Maryland, North Carolina, and Virginia; 1921: Alabama, New Hampshire, North Carolina, and Virginia; 1922: Alabama, North Carolina, and Virginia; 1923: Maine, Minnesota, North Carolina, and Virginia; 1924–25: New Hampshire, North Carolina, and Virginia.

GRINDSTONES AND PULPSTONES

Grindstones and pulpstones are made from sandstone quarried in northeastern and eastern Ohio, western West Virginia, eastern Michigan and, during the last few years, in Pierce County, Wash. In 1925 there was a decrease of 2 per cent in the total quantity of grindstones and pulpstones sold by producers as compared with 1924. The total value of such stones in 1925 was $1,705,939.

Grindstones and pulpstones sold by producers in the United States, 1916–1925

Year	Grindstones		Pulpstones		
	Short tons	Value	Pieces	Short tons	Value
1916	50,839	$631,497	1,066	(1)	$134,643
1917	54,432	806,896	2,325	(1)	340,888
1918	56,554	1,262,602	2,921	8,785	513,680
1919	40,755	993,959	2,450	6,110	342,056
1920	44,832	1,239,990	2,321	8,652	467,014
1921	16,310	477,259	2,941	10,030	750,063
1922	21,367	574,900	[2] 1,619	[2] 5,157	[2] 445,286
1923	37,384	1,008,899	2,533	9,186	680,416
1924	28,991	852,260	2,660	9,193	814,409
1925	28,970	864,637	2,530	8,370	841,302

[1] Figures not available. [2] Exclusive of sales in Washington prior to 1923.

OILSTONES AND SCYTHESTONES

Natural stone or quarry products used as abrasive material include, besides the millstones, grindstones, and pulpstones above considered, oilstones, whetstones, hones, rubbing stones, and scythestones. These are cut or otherwise shaped, usually in small pieces, in a great variety of forms for the special uses indicated by their names. Oilstones are produced in the United States chiefly from novaculite quarried in Arkansas; whetstones chiefly from sandstone quarried in Indiana and Kentucky; scythestones from sandstone quarried in Indiana and Ohio and from schist quarried in New Hampshire and

Vermont; and rubbing stones from sandstone quarried in Indiana, Ohio, and Washington. In earlier years a small production of hones was from sandstone quarried in Kentucky, but none was reported in 1924 and 1925.

Oilstones, whetstones, hones, scythestones, and rubbing stones sold by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	(1)	$154,573	1921	831	$173,025
1917	1,816	168,704	1922	1,016	197,450
1918	1,010	189,033	1923	1,223	231,812
1919	1,463	235,943	1924	1,056	258,943
1920	1,144	231,747	1925	970	272,224

[1] Figures not available.

CORUNDUM AND EMERY

No production of corundum in the United States has been reported since 1918, and emery was produced in 1925 only from the Peekskill region, New York. The deposits in Pittsylvania County, Va., were not worked, and deposits in other localities have either been exhausted or, under present conditions, can not meet the competition of emery from New York, Greece, and Turkey.

Emery sold or used by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	15,282	$123,901	1921	305	$2,250
1917	[1] 17,135	[1] 241,050	1922	1,468	17,511
1918	[2] 10,422	[2] 112,878	1923	2,286	29,478
1919	2,601	23,203	1924	2,195	19,756
1920	2,327	21,685	1925	769	5,907

[1] Includes 820 short tons of corundum, valued at $67,461. [2] Includes corundum.

GARNET

In 1925 the sales of abrasive garnet by producers in the United States amounted to 8,429 short tons, valued at $712,853. This is the largest output reported in any year except 1923. The average value of garnet mined in 1925 was close to $85 a ton, as compared with $81 in 1924 and $76 in 1923. The major part of the production was made in Warren County, N. Y., and the remainder in Merrimack County, N. H. Some New York garnet was sold at prices well above the average value cited.

The development of a mining and milling plant on the so-called rhodolite garnet deposits in Jackson County, N. C., was under way in 1925, but no report of production or sales was received by the Bureau of Mines.

Abrasive garnet sold or used by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	6,171	$208,850	1921	3,048	$260,687
1917	4,995	198,327	1922	7,054	566,879
1918	4,696	248,161	1923	9,006	688,437
1919	4,944	310,131	1924	8,290	674,176
1920	5,476	434,425	1925	8,429	712,853

TRIPOLI

The value of tripoli sold (including Pennsylvania "rottenstone") in 1925, as reported by producers, was $434,886. This value corresponds approximately to 30,000 short tons of material, of which about one-sixth was sold in the form of crude quarry products and some of which was sold for little more than $1 a ton. Most of the production, however, was sold in ground or otherwise prepared form by the producers at values ranging from $13 to $23 a ton.

The chief sources of production in 1925, as in previous years, were a small area lying in Newton County, Mo., and Ottawa County, Okla., and the Alexander-Union County area in southern Illinois. An appreciable output was also reported from Tennessee, and the output of rottenstone in Lycoming County, Pa., is also included in the figures here presented.

Some of the Missouri-Oklahoma tripoli is produced primarily for use as an abrasive, and some of it is mined to be worked up into filter blocks, the cuttings and waste from the making of which are ground and prepared for abrasive and other uses. The larger part of the Missouri output is used as filler, for foundry facings, and in many other ways. The Illinois product is generally known simply as "silica," and though used to some extent as an abrasive for metal polishes, in soaps, and in cleansers, it is very largely used in paint and fillers, in making glass, in the body and enamel of ceramic wares, and for facing foundry molds.

It is not possible to determine the amounts of tripoli used as abrasive material and otherwise, nor to obtain from the producers uniform reports on the quantity and value of the crude or rough quarried material, as they sell much of the product originally in some manufactured or prepared form. Statistics herein reported and in earlier chapters of Mineral Resources therefore do not permit satisfactory comparison between years or between producing States. In the following table the value for the total output of crude tripoli is in part an arbitrarily assigned value, inasmuch as a large part of the output is not sold crude but in ground or other prepared form by the original producers. The values given "as sold" are the total realizations as reported by producers and include receipts from sales of both crude and ground or otherwise finished material.

Tripoli (including Pennsylvania rottenstone) sold or used by producers in the United States, 1916–1925

Year	Illinois			Other States[1]			Total		
	Short tons	Value		Short tons	Value		Short tons	Value	
		Crude (estimated)	As sold (crude and finished)		Crude (estimated)	As sold (crude and finished)		Crude (estimated)	As sold (crude and finished)
1916	33,187	$82,968	[2]	10,070	$132,248	[2]	43,257	$215,216	[2]
1917	16,133	31,338	$207,738	9,936	61,078	$130,450	26,069	92,416	$338,188
1918	12,004	18,902	100,126	7,978	34,913	99,728	19,982	53,815	199,854
1919	13,014	32,961	116,492	11,278	65,049	65,049	24,292	98,010	181,541
1920	24,458	66,509	360,651	15,775	97,567	209,026	40,233	164,076	569,677
1921	7,765	27,333	125,352	4,575	26,559	87,661	12,340	53,892	213,013
1922	18,747	54,741	194,371	11,458	50,568	122,357	30,205	105,309	316,728
1923	11,522	31,230	117,201	15,560	30,960	265,556	27,082	62,190	382,757
1924	13,466	23,566	116,188	15,010	31,971	273,221	28,476	55,537	389,409
1925	11,809	27,480	143,859	17,579	31,290	291,027	29,388	58,770	434,886

[1] 1916–1923: Missouri, Oklahoma, and Pennsylvania; 1924–25: Missouri, Oklahoma, Pennsylvania, and Tennessee.
[2] Figures not available.

DIATOMACEOUS EARTH

The output of diatomaceous earth in 1925, as reported by producers, totaled 73,030 short tons, valued at $922,281. This is the largest production on record and reflects the growth of consumption and the increasing variety of uses to which this material is applied. Probably the development of chief importance in respect to diatomaceous earth during the year was the increased appreciation of its value for use with cement in concrete aggregate.

As usual, the chief source of production was California, but a large output was also reported from Oregon and a small amount from Washington. There was also a small production in Nevada, New York, and New Hampshire. The output of the last two States was used in the preparation of polishing compounds.

Diatomaceous earth sold or used by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916[1]	2,721	$26,337	1921	[2] 55,134	[2] $682,616
1917[1]	3,033	31,368	1922	44,761	386,669
1918[1]	2,965	24,947	1923	65,833	699,406
1919	42,642	531,960	1924	63,163	693,917
1920	61,922	1,079,693	1925	73,030	922,281

[1] Exclusive of considerable production for special uses upon which the Bureau of Mines is not at liberty to report.
[2] Partly estimated.

PUMICE

Production of pumice in the United States in 1925 was reported from Imperial County, Calif.; Meade and Norton Counties, Kans.; and Lincoln County, Nebr. The California output was largely lump pumice, a part of which, however, was ground before being sold. In Kansas and Nebraska the pumice was dug from beds of fragmental volcanic glass or so-called ash. The total quantity sold or used by producers in 1925 was 40,380 short tons, valued at $179,020, which was less than during each of the three years preceding.

Pumice sold or used by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	33,320	$82,263	1921	37,108	$158,540
1917	35,293	84,814	1922	45,262	175,600
1918	30,637	91,178	1923	56,575	214,169
1919	36,051	116,835	1924	43,651	190,253
1920	41,838	114,433	1925	40,380	179,020

PEBBLES FOR GRINDING AND FLINT LINING FOR TUBE MILLS

The commercial production of pebbles used for grinding minerals, ores, cement, and for other purposes, together with the output of quartzite blocks for use as tube-mill liners, includes, so far as known to the Bureau of Mines, only the output of beach pebbles in southern California and of cut cubes and artificially rounded pebbles and cut liners made of quartzite in Minnesota and South Dakota. The figures in the following table appear to cover the entire commercial output, but doubtless there was unrecorded additional production for local or own use by other companies than those reporting.

Pebbles for grinding and flint lining for tube mills sold or used by producers in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	[1] 6,345	[1] $42,500	1921	989	$14,637
1917	15,050	131,441	1922	3,159	30,798
1918	12,469	129,485	1923	4,551	51,795
1919	9,448	85,302	1924	2,532	37,429
1920	10,924	77,823	1925	3,831	50,147

[1] Grinding pebbles only. Figures for tube-mill lining not available.

IMPORTS AND EXPORTS

Value of abrasive materials imported for consumption in the United States, 1921–1925

Material	1921	1922	1923	1924	1925
Millstones and burrstones	$13,556	$15,356	$20,102	$6,311	$8,413
Grindstones	81,880	81,733	106,028	122,440	124,319
Hones, oilstones, and whetstones	35,761	48,938	53,233	43,579	49,108
Emery and corundum	393,454	389,390	722,688	364,755	313,718
Garnet	(1)	[1] 1,837	93,803	54,402	200
Diatomaceous earth, tripoli, and rottenstone	13,203	10,429	11,779	9,504	6,589
Pumice	173,201	118,458	128,693	111,284	130,460
Diamond dust and bort	466,345	1,029,261	228,409	259,482	760,476
Flint, flints, and flintstones, unground	116,157	145,805	130,974	114,958	105,041

[1] Not separately classified prior to new tariff, Sept. 22, 1922.

Abrasive materials imported for consumption in the United States, 1924–25, by kinds

Kind	1924		1925	
	Quantity	Value	Quantity	Value
Millstones and burrstones:				
Rough or unmanufactured ..... short tons	106	$5,720	139	$7,944
Bound up into millstones ..... do	6	591	2	469
Grindstones, finished or unfinished ..... do	2,855	122,440	2,625	124,319
Hones, oilstones, and whetstones ..... do	245	43,579	229	49,108
Emery:				
Ore ..... do	7,078	171,781	7,610	127,751
Grains, ground, pulverized, or refined ..... pounds	385,617	15,905	214,446	9,045
Paper and cloth of emery or corundum ..... do	110,302	25,030	269,836	61,315
Wheels, files, and other manufactures of which emery or corundum is the material of chief value ..... pounds	70,096	29,088	65,896	33,316
Corundum (see also "Emery"):				
Ore ..... short tons	3,310	121,036	1,643	81,273
Grains, ground, pulverized, or refined ..... pounds	31,278	1,915	10,980	1,018
Garnet ..... short tons	1,123	54,402	2	200
Diatomaceous earth, tripoli, and rottenstone ..... do	217	9,504	160	6,589
Pumice:				
Crude or unmanufactured ..... do	9,076	76,106	10,142	98,592
Manufactures of, or of which pumice is the component material of chief value ..... short tons	2,730	35,178	2,990	31,868
Diamond:				
Bort ..... carats	22,908	217,944	104,247	731,060
Dust ..... pounds	49	41,538	128	29,416
Flint, flints, and flintstones, unground ..... short tons	17,473	114,958	16,240	105,041
		1,086,715		1,498,324

Value of domestic abrasive materials exported from the United States, 1921–1925

Material	1921	1922	1923	1924	1925
Grindstones	$281,976	$281,413	$499,123	$481,397	$553,750
Abrasive wheels, emery, and other	1,318,804	644,151	571,733	521,840	439,904
All other natural abrasives, hones, whetstones, etc.	1,719,810	292,051	342,737	173,731	195,915

ARTIFICIAL ABRASIVES

The table that follows gives the production of artificial abrasives of three kinds—silicon carbide, aluminum oxide, and steel shot or crushed steel grains. These comprise the artificial abrasives that compete with the natural abrasives used as grains—for example, emery, corundum, and garnet. The figures represent the total output of crude materials or first product of the manufacturing plants, not all of which is used as abrasive material; in fact, a large but undetermined part of the silicon carbide and aluminum oxide output is not so used. The total output is shown here without separation of the products according to the uses to which they are put, because it is thought that the proportion used as abrasive material has not fluctuated so widely in recent years as to destroy the value of these figures for comparison with the statistics of natural abrasives.

Crude artificial abrasives, sold, shipped, or used, from manufacturing plants in the United States and Canada, 1916–1925

Year	Silicon carbide		Aluminum oxide		Metallic abrasives		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1916	7,025	$707,120	30,708	$2,139,230	1,073	$89,559	38,806	$2,935,909
1917	8,323	1,074,152	48,463	6,969,387	1,125	93,703	57,911	8,137,242
1918	10,047	1,518,600	35,716	5,741,270	5,150	422,727	50,913	7,682,597
1919	28,435	3,380,151	19,723	3,811,498	2,360	274,200	50,518	7,465,849
1920	6,887	1,309,605	32,891	5,956,659	2,659	225,920	42,437	7,492,164
1921	2,707	475,336	7,325	1,318,771	3,167	202,040	13,199	1,996,147
1922	16,233	2,022,613	31,898	3,246,714	5,804	421,148	53,935	5,690,475
1923	21,149	2,786,929	51,391	5,378,926	8,229	612,140	80,769	8,777,995
1924	17,792	2,161,498	33,708	3,482,577	8,597	569,665	60,097	6,213,740
1925	24,112	2,493,756	53,253	4,714,562	11,165	780,612	88,530	7,988,930

MICA

By W. M. Myers and Blanche H. Stoddard[1]

INTRODUCTION

The activity and continued expansion of the electrical industries, in which mica is as essential as copper, has been accompanied during 1925 by increased production and utilization of mica. The unusual combination of physical properties that mica possesses, particularly transparency, elasticity, high dielectric strength, and perfect cleavage that permits the making of thin sheets to a precision of one ten-thousandth of an inch, makes this mineral indispensable in the manufacture of certain types of electrical equipment. Although many attempts have been made to develop insulating materials that could be manufactured and substituted for mica at less cost, experience has shown that these substitutes do not possess all of the properties of mica; their use has therefore been restricted, and has not presented serious competition.

Much of the sheet mica produced does not possess the requisite qualifications for use in the manufacture of condensers and other high-grade electrical equipment, and must be sold for other purposes. Part of this material is utilized in the manufacture of heating units that have widespread application in many heating utensils. The ease with which mica may be stamped to definite patterns upon which the heating element of high-resistance wire may be wound directly, and the fact that this mica pattern will resist fairly high temperatures without damage or loss of insulating properties, makes mica exceptionally valuable for this purpose. Because of its transparency and heat-resisting qualities mica is serviceable as a glazing material, particularly at points where temperatures are above normal; it is therefore used extensively in stoves, furnaces, and fuses.

From any one mine the percentage of the total output of mica that can be manufactured into sheets is generally small, seldom exceeding 10 per cent. In the early years of the mica industry the rejected material was mostly wasted; to-day this scrap mica is in active demand for grinding. The increasing use of ground mica in many industries has afforded a good market for mine waste and trimmings from the production of sheet goods. This is a decided asset to many producers, as the additional revenue derived from the scrap mica has made possible the profitable operation of mines that could not be worked for sheet mica alone.

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

MINING AND PREPARATION

All of the mica mined in the United States is of the muscovite variety. Large crystals of this variety are found only in pegmatite formations. Pegmatites have the same mineralogical composition as granites, but differ in structure, having extremely coarse crystallization. The essential minerals, quartz, feldspar, and mica, often occur in very large individual crystals and aggregates. Pegmatites are decidedly irregular in structure and extent. They sometimes form perpendicular dikes with well-defined walls and great lateral extent, but more often they are irregular lenses that may expand or contract very suddenly. This irregularity has a marked influence on the development of mica mines, for it has made any large systematic operations impossible. The likelihood that the pegmatite formation may suddenly become smaller or entirely disappear increases the uncertainty of successful mining. Occasionally, in some locations the mica is found near one of the walls or is associated more commonly with one of the accessory minerals than with others. This fact has been an aid in the development of some mines, as it has served to guide the miner in his operations.

The feldspar production of the country is obtained from similar pegmatites, and in many of the feldspar-mining operations a considerable quantity of mica is derived as a by-product. Many of the feldspar mines or quarries have been developed on a fair-sized scale, owing to the necessity of producing a large tonnage in order to justify operation. These feldspar deposits are virtually all worked as open-cut quarries. They are supplied with air compressors, mechanical drills, and mechanical haulage for the removal of the ore. The rock is stripped, if necessary to remove any worthless overburden, drilled with jackhammers, and shot with the proper explosive, generally 40 per cent dynamite. The broken ore is cobbed by hand, and the clean spar is selected and thrown into the quarry cars for removal to storage bins. The mica encountered is generally thrown to one side and later sorted; the clear flat material suitable for sheet use is sorted out, and the mine-run scrap is set aside for storage. The production of by-product mica in feldspar mining often provides an additional source of income which may pay a large part of the cost of operation of the property.

Few mica mines that are worked for the recovery of mica alone follow any definite method of mining. The amount of workable mica in reserve is seldom known and can not be readily determined by exploration. Drilling to determine the extent of this mica is rarely done, as the results obtained by such exploration are of doubtful value because of the irregular distribution of the workable mica. Many of the smaller mines are worked intermittently by the most primitive methods, and with the least possible financial investment. Irregular excavations are driven from one mica "book" (large crystal) to the next, and work is suspended as soon as the recovery of mica fails to pay expenses. Many of these mines are operated by farmers during months when farm work is slack. Production is small and irregular. Some smaller mines have been taken over by mining companies and supplied with better equipment, permitting more rapid exploration and economical recovery of the mica.

In drilling, either by hand or with mechanical drills, care is taken not to penetrate the books of mica, for fear of destroying valuable material. To drill through mica is difficult. The experienced miner knows at once when the drill encounters a crystal of mica of appreciable size, because of the difficulty of drilling and the peculiar resilience of the mica when struck by the drill. If mica is encountered, the hole is abandoned and another started at a distance from it. The mica is cleaned underground by knocking off the adhering quartz or feldspar. The mine-run material is brought to the surface for further treatment, and is generally placed in bins until enough is accumulated to ship or treat.

Mine-run mica consists of the broken crystals or books which may vary greatly in dimensions. It is first cleaned of any adhering dirt or other minerals with hammers and knives; the cleaned material is then transported to the trimming shops where it is split and sorted according to size and quality. The sheets are split to an average thickness of one-sixteenth of an inch, and trimmed so that all stained, rumpled, and flawed material is removed. Many of the sheets of mica are cut with the edge beveled so that further splitting may be facilitated.

The finished sheet mica is either sold to consumers or else may be further manufactured at the point of production. The sheets may be cut to definite rectangles by use of a templet and shears, or they may be stamped out in a desired pattern by punching machines. Most of the mica sheets under 2 inches in diameter are classified as "punch," and are utilized in the manufacture of disks, washers, and special shapes. In the preparation of the thinnest mica splittings for electrical condensers, it is essential that the material be of the correct thickness. Skilled splitters, using either splitting knives or needles and micrometer gauges, are able to prepare mica films of a thickness of plus or minus one ten-thousandth of an inch for the very finest classes of work. Many attempts have been made to develop splitting machines that would automatically prepare mica of the specified thickness. Such machines have not been adopted to any large extent, because the preparation of mica films requires a certain amount of intelligence and judgment that can be supplied only through human agency.

Large quantities of mica splittings are consumed in this country for the manufacture of built-up mica products. These splittings are imported almost entirely from India, where they are manufactured by splitting down small mica sheets by hand. Attempts to produce splittings suitable for this use in the United States have not been successful, mainly because of the cost of labor, which is necessarily much greater here than in India. The imported mica splittings are built up with shellac and other adhesives into mica board, which is composed of alternate layers of mica splittings and binder. The finished board is baked under pressure and machined to definite dimensions; it may then be molded, shaped, and drilled, and readily used for many purposes.

Ground mica is prepared by both dry and wet grinding. In dry grinding the clean scrap mica is fed to a hammer mill that breaks up the mica aggregates. The ground material is conducted to a series of vibrating screens of the desired dimensions, from which

a finished sized product is obtained. The oversize material, that which does not pass the screen, is returned to the mill for further grinding. Most of the dry-ground material is comparatively coarse. Wet-ground mica is produced by grinding clean scrap in wooden tubs supplied with impellers that, when they are in operation, swirl the charge of mica and water around, the pieces of mica being ground by mutual abrasion. This type of grinding is necessarily slow and expensive. After the charge is ground it is removed from the mill, dried, and bolted through screens to produce a finished product of the desired dimension, generally 120 to 160 mesh. Wet-ground material reflects more light than dry-ground mica, and therefore is particularly suitable for use in decorating wall paper when a lustrous pattern is desired.

At times the supplies of scrap mica suitable for grinding have not been adequate to meet the demand. Mica schist has, therefore, been successfully employed in the production of ground mica, and there seems to be an increasing tendency to utilize this material. During the year more attention has been paid to the recovery of mica associated with kaolin deposits. Equipment for recovering mica has been installed in plants treating kaolin for the preparation of commercial clays. Very little of this material is large enough to be of value for use as sheet mica; however, it furnishes a scrap mica of excellent quality for grinding, and its recovery has proved to be profitable.

USES

As already noted, the chief use of mica is in the electrical industries. One very widespread and important use is in the manufacture of the transmitter button, an integral part of the modern telephone instrument. Mica is also used in the manufacture of lightning arresters, condensers, commutators, and many special types of equipment. In addition to its use for the glazing of stoves and furnaces, mica is manufactured into lamp chimneys, particularly for gas and gasoline lamps. For this purpose the mica must be clear, even splitting, and flexible; little domestic mica is suitable for this purpose. Ground mica is utilized in the preparation of rolled roofing; it is dusted on the roofing material before rolling, and thereby prevents sticking of the rolls. A pound of mica has great covering power because of the flat shape of the thin particles. Ground mica is also used as a decorative material on wall paper and in special paints. It is occasionally employed as a facing for concrete to simulate granite. Coarsely ground material is used for decoration and is sold under the name of Christmas-tree snow; the tonnage of material consumed in this market reaches an appreciable figure. Finely ground mica is used as a lubricant incorporated with greases, and also alone, especially as a tire powder. It is also used extensively as a rubber filler and in many other minor industries.

Very flat and sound high-grade mica was previously in great demand for diaphragm use in phonographs. During the past year the demand in this market has shown a great decrease, due to competition with the radio and to the development of new types of phonographs which do not employ mica diaphragms. There has also been a constantly decreasing demand for mica chimneys on account of the

replacement of gas by electric lights. The use of mica in the manufacture of spark plugs, which at one time was of much importance, has greatly decreased since the introduction of improved spark-plug porcelains.

The sudden and surprising development of the radio industry has created a market for very large quantities of mica, particularly in the smaller sizes of sheet material suitable for the manufacture of condensers. A certain amount of diaphragm mica has also been consumed in the manufacture of head phones and loud speakers, but this does not compensate for the decreased demand in the phonograph trade.

It is anticipated that the future expansion of the electrical industries will supply a market for large quantities of sheet mica and splittings. The projected electrification of certain railroad lines and the development of the oil-electric locomotive will also demand large quantities of this mineral.

NEW UTILIZATION

The term "vermiculite" is applied to a group of micaceous minerals which generally are alteration products of mica. The original cleavage is partly retained; other physical properties and the chemical composition exhibit varying degrees of alteration. Until a few years ago the known deposits were so small that vermiculite was considered a mineralogical curiosity. The discovery of large quantities of this material in Colorado and Montana has attracted attention to the commercial possibilities. The most pronounced characteristic of vermiculites is great expansion by heating. This expansion or exfoliation takes place in only one direction, at right angles to the cleavage, and during expansion the volume increases up to sixteen times the original. At the same time the color changes from a black or dark brown to a silvery or golden hue, according to the degree of heat and the exposure to the air. This change of color is believed to be caused by the oxidation of the iron in the mica and therefore to vary with the amount of oxygen available. The expanded product has been found to be an excellent heat insulator and sound deadener, and to possess possibilities as a paint and calcimine pigment. It also may be used in the decoration of wall paper. It is expected that the investigations of the properties of this mineral which are being carried on by the Jefferisite Products Co., of Denver, Colo., and the Zonolite Co., of Spokane, Wash., will result in appreciable industrial utilization.

PRODUCTION

Mica mining, which in 1924 showed a notable decline from the preceding year, in 1925 gave evidence of substantial progress as indicated by statistics furnished by producers and others in the business. Sales by producers in New Hampshire and North Carolina (the chief producing States) increased 81 per cent over 1924. Imports of mica for consumption declined 16 per cent in quantity and 23 per cent in value. Exports increased 59 per cent in quantity and 17 per cent in value compared with 1924.

The total quantity of uncut mica sold by producers in the United States in 1925 was 10,592 short tons, valued at $495,499. Of this

quantity, 897 tons (1,793,865 pounds), valued at $321,962, was sheet mica; the rest was scrap mica. These figures indicate an increase in sheet mica of 23 per cent in quantity and 52 per cent in value, as compared with 1924. The scrap mica increased 106 per cent in quantity and 99 per cent in value over 1924. The total quantity of scrap mica sold by producers is the highest ever recorded.

Mica sold by producers in the United States, 1916–1925 [1]

Year	Sheet mica [1]		Scrap mica		Total [1]	
	Pounds	Value	Short tons	Value	Short tons	Value
1916	865,863	$524,485	4,433	$69,906	4,866	$594,391
1917	1,276,533	753,874	3,429	52,908	4,067	806,782
1918	1,644,200	731,810	2,292	33,130	3,114	764,940
1919	1,545,709	483,567	3,258	58,084	4,031	541,651
1920	1,683,480	546,972	5,723	167,017	6,565	713,989
1921	741,845	118,513	2,577	56,849	2,948	175,362
1922	1,077,968	194,301	[2] 6,641	114,045	[2] 7,180	308,346
1923	2,063,179	311,180	[2] 8,054	129,695	[2] 9,086	440,875
1924	1,460,897	212,085	4,709	87,242	5,439	299,277
1925	1,793,865	321,962	9,695	173,537	10,592	495,499

[1] For 1920 and later years the figures for sheet mica represent uncut sheet exclusively; for earlier years some cut sheet was included.
[2] Includes mica derived from mica schist.

PRODUCTION BY STATES

New Hampshire.—In 1925 New Hampshire sold 62 per cent of the total quantity of domestic sheet mica sold by producers in the United States, as compared with 51 per cent in 1924. The average value in 1925 was 18 cents a pound. The average value of a short ton of scrap mica in 1925 was $24, as compared with $19 a ton in 1924. The increase in total value of the sheet mica and scrap mica over the preceding year is very marked, as the accompanying table indicates. This increase has been due in part to the larger production from the Ruggles and Valencia mines operated by the Standard Feldspar Co. The Ruggles mine, one of the oldest producers in the country, and worked intermittently for more than a hundred years, has produced a large quantity of high-grade sheet mica. The property is now in a position to maintain a steady and uniform output. Operations of the General Electric Co., near Alexandria, have also accounted for part of the increased production of the State. The growing importance of New Hampshire as a producer of mica has been one of the most notable developments of the year.

North Carolina.—The sales of sheet mica by producers in North Carolina in 1925 were 33 per cent of the total, as compared with 41 per cent in 1924. Sales of scrap mica, however, increased 59 per cent over 1924, and were 53 per cent of the total scrap mica sold by producers in the United States. This increase in the output of scrap has been due in part to the activity of feldspar mines and the accompanying increase in the production of by-product mica, and also to the mica recovered similarly from the washing of kaolin. A number of mines have also been worked for the recovery of scrap

mica alone. A remarkable single mica book weighing 4,332 pounds was recovered by the Spruce Pine Mica Co. from one of its operations in the early part of 1926. This is one of the largest single crystals ever reported. Average values were 18 cents a pound for sheet mica, about the same as in 1924, and $15 a ton for scrap mica, as compared with $19 a ton in 1924.

Mica sold by producers in chief producing States, 1921–1925

Year	Sheet mica			Scrap mica		Total	
	Pounds	Short tons	Value	Short tons	Value	Short tons	Value
New Hampshire:							
1921	491,743	246	$63,249	537	$10,613	783	$73,862
1922	475,647	238	63,240	238	5,838	476	69,078
1923	835,751	418	107,674	1,078	25,871	1,496	133,545
1924	744,133	372	88,737	492	9,498	864	98,235
1925	1,120,857	560	198,858	1,953	47,525	2,513	246,383
North Carolina:							
1921	230,532	115	51,851	1,353	30,496	1,468	82,347
1922	544,495	272	119,767	[1] 4,205	65,923	[1] 4,477	185,690
1923	1,130,283	565	188,317	[1] 5,005	65,764	[1] 5,570	254,081
1924	597,385	299	108,656	3,212	59,620	3,511	168,276
1925	592,478	296	105,376	5,095	74,818	5,391	180,194

[1] Includes mica derived from mica schist.

Other States.—The other producing States were Alabama, Colorado, Connecticut, Georgia, Maine, Nevada, New Mexico, South Carolina, South Dakota, and Virginia, whose combined sales of sheet mica were about 5 per cent of the total sheet mica sold. Sales in New Mexico amounted to 34,486 pounds of sheet mica, valued at $7,531, and 920 tons of scrap mica, valued at $14,580. All of the scrap mica produced in New Mexico was shipped to other States for grinding. The Hoyt Mineral Corporation, of Las Tablas, is planning the erection of a dry-grinding mill so that scrap may be ground near the point of production. As a market exists in California for ground mica which, owing to the total lack of local production, must be supplied by shipments from other States, it seems probable that the ground material produced in New Mexico can be readily sold. Considerable exploration has been carried on in the Petaca district in northern New Mexico with promising results. An increased output of both scrap mica and small sheet mica is expected from this State. South Dakota reported 1,555 pounds of sheet mica, valued at $207, and 996 tons of scrap mica, valued at $19,220. Most of this production of scrap mica has been obtained as a by-product of feldspar mining by the Keystone Feldspar & Chemical Co., operating feldspar quarries near Keystone. The Bureau of Mines is not at liberty to publish the figures for the other States separately, as there were less than three producers in each State.

Value of mica sold by producers in the United States, 1921–1925

Year	Total	Average	
		Sheet and scrap (per short ton)	Sheet (per pound)
1921	$175,362	$59	$0.16
1922	308,346	43	.18
1923	440,875	49	.15
1924	299,277	55	.15
1925	495,499	47	.18

In the following table 89 per cent of the total quantity of uncut sheet mica sold by producers in 1925 has been classified to show the qualities of mica and the average value by sizes:

Clear and stained uncut rough-trimmed sheet mica sold by producers in the United States in 1925, by sizes

[Shows 89 per cent of the total for the United States]

Size	Clear			Stained			Total classified	
	Pounds	Value		Pounds	Value		Pounds	Percentage
		Total	Average		Total	Average		
Punch or washer	581,467	$50,048	$0.09	645,323	$34,260	$0.05	1,226,790	77.0
Circle	73,459	13,476	.18				73,459	4.6
1½ by 2 inches	41,283	9,553	.23	42,355	7,200	.17	83,638	5.2
2 by 2 inches	23,736	9,736	.41	62,533	15,931	.25	86,269	5.4
2 by 3 inches	17,829	16,383	.92	45,752	24,372	.53	63,581	4.0
3 by 3 inches	5,932	7,852	1.32	11,193	11,172	1.00	17,125	1.1
3 by 4 inches	3,421	6,135	1.79	15,513	20,731	1.34	18,934	1.2
3 by 5 inches	3,479	7,550	2.17	10,077	15,318	1.52	13,556	1.5
4 by 6 inches	1,344	4,112	3.06	9,557	18,166	1.90	10,901	
6 by 8 inches	103	466	4.52				103	
	752,053	125,311	.17	842,303	147,150	.17	1,594,356	100.0

PRICES

Information received from several sources in the mica industry indicates that there was a constant demand for clear No. 1 sheet mica, of which at times there seemed to be a scarcity. The demand for both uncut sheet and scrap mica was considered good during the entire year. Prices paid for uncut sheet mica remained fairly constant during the first six months of the year, taking a slight upward trend in May and dropping again in July. In August the prices rose again and remained fairly constant to the end of the year.

Current market prices of mica during the year, as quoted in trade journals and reported by mica dealers direct, were approximately as follows:

Market prices of mica in the United States in 1925

Size (good quality)	Price (per pound)	Size (good quality)	Price (per pound)
Sheet:		Sheet—Continued.	
Punch	$0.05 to $0.08	4 by 6 inches	$2.20 to $3.50
1½ by 2 inches	.15 to .30	6 by 8 inches	3.50 to 6.00
2 by 2 inches	.30 to .50	8 by 10 inches	5.00 to 8.00
2 by 3 inches	.70 to 1.00	Scrap, per ton	17.00 to 30.00
3 by 3 inches	1.25 to 2.00	Ground, per ton, roofing grades	30.00 to 70.00
3 by 4 inches	1.20 to 2.40	Ground, per ton, other grades	65.00 to 125.00
3 by 5 inches	1.80 to 2.75		

CLASSIFICATION

For commercial sheet mica the individual pieces must be large enough to contain a rectangular area measuring at least 1½ by 2 inches, which must split easily and evenly and be nearly free from "cracks," "rulings," "markings," and all fracture lines and reasonably free from inclusions or specks of foreign mineral matter. The size stated is the smallest rectangular size that is salable in the form of uncut sheet; the irregularly bounded rough-trimmed mica sheet must be nearly twice as large to yield this size—in other words, a sheet that would yield a suitable rectangle 1½ by 2 inches and would be classed as "1½ by 2 inches" would have to measure nearly 3 by 4 inches.

Splittings are the thin films or flakes of mica that are split from the smaller sheet or waste material. They are about one-thousandth of an inch thick and are irregular in shape.

Material suitable as scrap mica for grinding must be free from all foreign matter, especially gritty material such as quartz and feldspar.

The system of classification of mica, by sizes, is different in the United States, Canada, and India.

The United States classification is as follows (figures represent inches): Punch, circle, 1½ by 2, 2 by 2, 2 by 3, 3 by 4, 3 by 5, 4 by 6, 6 by 6, 6 by 8, 8 by 10, and larger. For punch mica the uncut sheet must be of sufficient size to yield a circle 1½ inches in diameter if stained and 1¼ inches if clear; circle mica should yield a disk nearly 2 inches in diameter.

Canadian or "amber" mica is also classified on the basis of the size of the rectangle obtainable, but the sizes differ from those used for the United States mica. The sizes used for Canadian mica, in inches, are 1 by 1, 1 by 2, 1 by 3, 2 by 3, 2 by 4, 3 by 5, 4 by 6, and 5 by 8.

The Indian classification is not based on the size of the rectangle obtainable but on the area of usable mica in the sheet. The following table shows the Indian system of grading, with the approximate corresponding sizes used in the United States classification.

Grading of Indian mica

Grade	Area of usable mica (in square inches), based on rectangular sizes	Sizes of rectangles that can be cut (in inches)				Approximate corresponding sizes in United States classification (in inches)
		Width		Length		
		Minimum	Maximum	Minimum	Maximum	
6	Less than 3					Punch.
5	3 to 5⅞	1	2	2	2½	2 by 2.
4	6 to 9⅞	1½	2½	2½	3	2 by 3. 3 by 3.
3	10 to 14⅞	1½	3	3	4½	3 by 4.
2	15 to 23⅞	1½	3½	4½	6	3 by 5.
1	24 to 35⅞	3	5	5	7	4 by 6.
A–1	36 to 47⅞	4	6	7	9	5 by 8.
Special	48 to 59⅞					6 by 8.
Extra special	60 to 71⅞					8 by 8.
Extra extra special	72 and more					8 by 10.

Scrap mica, or mica that can not be utilized as sheet or splittings, is ground and sold in powdered form. The following table gives the quantity and value of ground mica sold or used by producers in the United States, 1923 to 1925.

Ground mica sold or used by producers in the United States, 1923–1925, in pounds

Year	Dry ground		Wet ground		Total	
	Pounds	Value	Pounds	Value	Pounds	Value
1923	5,660,000	$123,450	4,203,000	$250,170	9,863,000	$373,620
1924	5,184,000	101,700	5,735,000	331,410	10,919,000	433,110
1925	5,043,020	101,680	4,803,930	279,940	9,846,950	381,620

The approximate average value for dry-ground mica in 1925, as indicated by the table, was 2 cents a pound ($40 a short ton), and for wet-ground mica 6 cents a pound ($120 a ton).

CONSUMPTION OF SPLITTINGS

The consumption of mica splittings in the United States in 1925, as reported by consumers, was as follows: Indian splittings, 1,517 short tons, valued at $1,288,750; and Canadian splittings, 393 short tons, valued at $719,117. Some domestic and Madagascar splittings were reported, but the Bureau of Mines is not at liberty to publish the figures.

IMPORTS AND EXPORTS

Mica imported for consumption in 1925 included unmanufactured, ground, cut (dimension sheets), splittings, built-up mica boards, cups, tubes, and mica plates, washers, and other manufactures. Imports of unmanufactured mica, exclusive of the Madras square-shaped uncut sheets, decreased 10 per cent in quantity and increased 26 per cent in value. Imports of ground mica decreased 29 per cent in quantity and 40 per cent in value. Cut mica (dimension sheets) decreased 45 per cent in quantity and 8 per cent in value. Mica splittings, which constituted 66 per cent of the total quantity of mica imported, were 10 per cent less in quantity and 34 per cent less in value than in 1924. Imports of built-up mica boards, etc., decreased 20

per cent in quantity and 60 per cent in value, and the imports of washers were reduced 99 per cent in quantity and in value, compared with 1924.

The imports of uncut sheet mica, exclusive of the Madras square-shaped uncut sheets, in 1925 were 604,550 pounds, valued at $526,292.

Mica imported for consumption in the United States, 1921–1925

Kind	1921		1922		1923	
	Pounds	Value	Pounds	Value	Pounds	Value
Unmanufactured [1]	328,444	$331,219	385,653	$359,793	1,044,366	$532,375
Cut and split [2]	(3)	758,521	(3)	[4] 555,243	(4)	(4)
Ground	134,650	2,166	313,745	4,514	1,867,385	28,324
Cut mica (dimension sheets)	(5)	(5)	[5] 42,579	[5] 18,372	60,135	49,268
Splittings			[5] 1,063,306	[5] 371,801	4,301,727	1,730,532
Built-up mica boards, cups, tubes, and mica plates			[5] 1,807	[5] 2,860	30,032	37,382
Washers			[5] 2,562	[5] 675	20,164	6,776
Other manufactures			[5] 7,842	[5] 17,364	7,044	20,191
		1,091,906		1,330,622	7,330,853	2,404,848

Kind	1924		1925	
	Pounds	Value	Pounds	Value
Unmanufactured [1]	671,793	$419,154	604,550	$526,292
Cut and split [2]	(4)	(4)	(4)	(4)
Ground	1,342,107	22,034	950,614	13,120
Cut mica (dimension sheets)	74,534	69,018	41,284	63,466
Splittings	3,619,229	1,681,774	3,239,554	1,113,202
Built-up mica boards, cups, tubes, and mica plates	18,205	41,455	14,639	16,785
Washers	18,517	5,325	222	50
Other manufactures	56,766	88,146	50,445	65,912
	5,801,151	2,326,906	4,901,308	1,798,827

[1] Essentially uncut trimmed sheets.
[2] Includes the Madras square-shaped uncut sheets.
[3] Quantities not recorded prior to change in tariff, Sept. 22, 1922.
[4] Classification discontinued with change in tariff and items shown separately.
[5] Sept. 22–Dec. 31.
[6] Not separately classified prior to Sept. 22, 1922.

The import duty on mica as fixed by the tariff act of September 22, 1922, paragraph 208, is as follows:

Mica, unmanufactured, valued at not above 15 cents per pound, 4 cents per pound, valued above 15 cents per pound, 25 per cent ad valorem; mica, cut or trimmed, and mica splittings, 30 per cent ad valorem; mica plates, and built-up mica, and all manufactures of mica or of which mica is the component material of chief value, 40 per cent ad valorem; ground mica, 20 per cent ad valorem.

The following table showing mica imported (general imports) into the United States by kinds and by countries indicates that imports from India formed the largest percentage, being 56 per cent of the total. Mica from India is uncut sheet and splittings, but the proportions are not known. Although Madras square-trimmed mica is termed "cut mica" in import schedules, in reality it is uncut trimmed mica. Canada was the second largest shipper to the United States, and furnished 27 per cent of the total imports. Mica from Canada is phlogopite, and that from India is muscovite. Eighty-three per cent of the total mica imported into the United States in 1925 came from these two countries.

Mica imported into the United States in 1925, by kinds and by countries

[General imports]

Country	Crude or unmanufactured: Valued at not above 15 cents per pound (duty 4 cents per pound)		Crude or unmanufactured: Valued at above 15 cents per pound (duty 25 per cent)		Cut, dimension sheets (duty 30 per cent)		Splittings (duty 30 per cent)		Ground (duty 20 per cent)		Built-up products—boards, cups, tubes, and plates (duty 40 per cent)		Washers (duty 40 per cent)		Other manufactures, not specially provided for (duty 40 per cent)		Total	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Africa:																		
British—																		
East	90	$11	7,746	$10,586													7,836	$10,597
South	2,215	264	35,976	21,842													38,191	22,106
Portuguese—																		
East	1,751	229	1,210	774							1,473	$674					4,434	1,677
Other	42	5	3,234	1,003											821	$477	4,097	1,485
Argentina	27,638	3,017	62,016	37,973													89,654	40,990
Australia			993	2,394			180	$469									1,173	2,863
Brazil	278	39	47,682	58,067													47,960	58,106
Canada			41,048	12,207	778	$1,818	455,921	317,832	950,500	$13,088	120	74			48	63	1,448,415	345,082
Ceylon	3,069	5,526															3,069	5,526
China															30	36	30	36
Costa Rica											1,099	177					1,099	177
France	2,205	379	50,604	21,496			197,987	114,528							32	49	250,828	136,452
Germany	560	78	4,683	6,429	749	3,145	13,922	2,378	114	32	5,598	4,389			17,341	19,212	42,967	35,663
Guatemala			4,183	1,682	6,939	4,935	2,127	949			2,635	519	222	$50	14,809	3,061	30,915	11,196
India (British)	1,000	139	194,957	199,214	25,714	40,247	2,735,625	881,952			3,053	4,854	294	80	14,587	21,415	2,975,230	1,147,901
Malta, Gozo, and Cyprus Islands			1,156	1,342	1,153	1,280											2,309	2,622
Mexico	262	27	4,236	1,650													4,498	1,677
Switzerland											150	3,826			831	10,663	981	14,489
United Kingdom			127,738	170,824	7,509	14,059	209,292	64,876			1,405	4,054			8,495	18,342	354,439	272,155
	39,110	9,714	587,462	547,483	42,842	65,484	3,615,054	1,382,984	950,614	13,120	15,533	18,567	516	130	56,994	73,318	5,308,125	2,110,800

Mica and manufactures of mica exported in 1925 consisted of 2,422,197 pounds, valued at $198,596. These figures indicate an increase over 1924 of 59 per cent in quantity and 17 per cent in value. The total quantity of mica exported in 1924 was 1,519,636 pounds, valued at $169,741. As the classes of mica are not shown in export schedules, it is not possible to state what kinds of mica are exported.

WORLD'S PRODUCTION

World's production of mica, 1921–1925, in metric tons

[Compiled by L. M. Jones, of the Bureau of Mines]

Country	1921	1922	1923	1924	1925
North America:					
Canada	637	3,038	3,197	3,711	3,647
United States	2,674	6,514	8,243	4,934	9,609
South America:					
Argentina [1]	147	64	87	120	119
Brazil [1]	46	67	56	79	65
Europe:					
Norway [1]	2	1	10	25	(2)
Rumania			6		
Russia	(2)	8	(2)	(2)	(2)
Spain	2		3		
Sweden	(2)	8	5	4	(2)
Asia:					
Ceylon [1]	5	1	1		1
Chosen	11	19	11	23	20
India (British)	1,650	1,619	1,720	2,078	(2)
Japan	(2)	15	430	(2)	(2)
Africa:					
Madagascar [1]	141	92	165	286	267
Rhodesia, Southern	77	60	83	136	132
Tanganyika Territory [1]	3	11	33	57	(2)
Union of South Africa (Transvaal)	1	3	15	735	1,490
Oceania:					
Australia—					
Northern Territory	1	1	3	3	3
Queensland		(3)			1
Western Australia [1]		2			

[1] Exports. [2] Data not available. [3] Less than one-half ton.

World's production of sheet mica, 1921–1925, in metric tons

Year	United States	India	Canada	Other countries [1]	Total	United States percentage of total
1921	337	1,650	180	436	2,603	13
1922	489	1,619	179	352	2,639	19
1923	936	1,720	412	908	3,976	24
1924	663	2,078	618	1,468	4,827	14
1925	814	(2)	396	2,098	(2)	(2)

[1] Data incomplete, as no figures of production are available for some of the countries.
[2] Data not available.

NATURAL-GAS GASOLINE

By G. R. Hopkins

The production of raw natural-gas gasoline in the United States in 1925 amounted to 1,127,470,000 gallons, an increase of 193,609,000 gallons, or 21 per cent, over the output in 1924. The 1925 preliminary estimate was 1,104,900,000 gallons; the difference is due to the fact that small plants not reached by the monthly inquiries are included in the annual canvass.

Of the total output in 1925 716,940,000 gallons, or 64 per cent, were reported as being blended at refineries; 110,163,000 gallons, or 10 per cent, were turned into pipe lines and were run to stills; 24,600,000 gallons, or 2 per cent, were blended at the plants; 1,000,000 gallons were added to storage; leaving 24 per cent for losses and possible quantities not accounted for. The total percentage lost between the plant and the consumer is usually estimated as between 20 and 25 per cent.

All the States, with the exception of Louisiana and those in the Appalachian area—that is, New York, Ohio, Pennsylvania, and West Virginia—increased their output over 1924. Declines in the supply of gas were responsible for the decreased production in the States named. In the Appalachian States the decline was natural, whereas in Louisiana it was artificial through State regulation. Oklahoma retained her rank as the chief natural-gas gasoline producing State by virtue of a 30 per cent gain in output. California, ranking next in importance, also registered a 30 per cent gain over 1924.

Stocks of raw natural-gas gasoline at the plants at the beginning and end of the year amounted to 14,236,000 and 15,320,000 gallons, respectively. This indicates an addition to stocks during the year of slightly over 1,000,000 gallons.

The total amount of natural gas treated during the year 1925 was about 1,040,000,000,000 cubic feet. This is 88 per cent of the total consumption of natural gas, as compared with 89 per cent in 1924. The average yield per thousand cubic feet was 1.1 gallons, which is a gain over 1922, 1923, and 1924 of 0.2 gallon. Improvements in extraction methods and the necessity for complete utilization of all sources of gas to supply demand had their full effect in 1925 and were mainly responsible for the increase in yield. Of all the producing States Oklahoma made the greatest gain in recovery, its yield per thousand cubic feet increasing from 1.7 to 2 gallons. There is a growing tendency in the natural-gas gasoline industry, as in the refinery

[1] Figures compiled by E. M. Seeley, of the Bureau of Mines.

industry, toward the consolidation of plants in the hands of the larger companies and the construction of plants of larger capacity. This tendency is illustrated by the fact that there were 15 fewer plants in operation in 1925 than in 1924, yet the total capacity was increased.

As in 1924, there was a distinct tendency to abandon the compression process or to supplement it by the absorption or charcoal

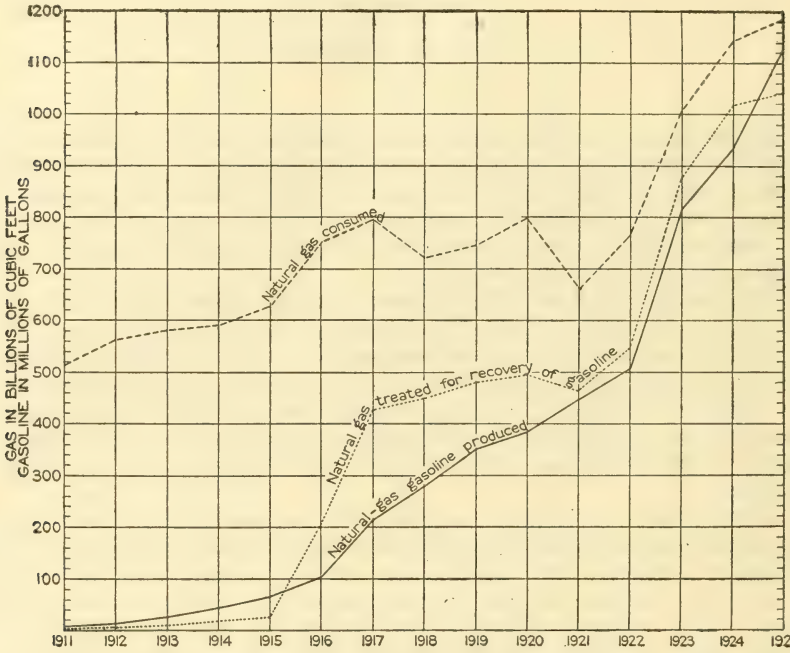

FIGURE 1.—Natural gas consumed, natural gas treated for recovery of gasoline, and natural-gas gasoline produced in the United States, 1911–1925

processes. Compression plants in the United States decreased by 66 in 1925; charcoal plants increased from 12 to 16, whereas absorption plants or those combining absorption with compression or charcoal increased by 47. Many of the compression plants, however, were in the Appalachian area and were abandoned or converted because of failing supplies of gas and not as a result of defects of the compression process. Plants using compression only in 1925 produced 21 per cent of the total output, as compared with 28 per cent in 1924.

Natural-gas gasoline produced in the United States, 1924–25, by States

State	Number of operators reporting [1]	Number of plants	Raw (unblended) gasoline produced			Estimated quantity of natural gas treated	
			Thousands of gallons	Value at plant		Millions of cubic feet	Average yield per M cubic feet (gallons)
				Thousands of dollars	Average per gallon (cents)		
1924							
Arkansas	5	9	17,533	1,784	10.2	3,243	5.4
California	61	140	232,579	22,690	9.8	217,445	1.1
Illinois	29	85	9,091	795	8.7	3,451	2.6
Kansas	8	14	11,658	913	7.8	15,796	.7
Kentucky	8	10	7,274	769	10.6	24,618	.3
Louisiana	33	45	48,098	3,887	8.1	136,448	.4
New York	5	5	477	50	10.5	381	1.3
Ohio	26	47	9,443	1,148	12.2	38,865	.2
Oklahoma	108	281	301,062	23,338	7.8	172,111	1.7
Pennsylvania	127	191	19,254	2,266	11.8	63,104	.3
Texas	44	106	186,571	14,460	7.8	148,554	1.3
West Virginia	56	152	61,549	7,154	11.6	160,007	.4
Wyoming	8	11	29,272	2,979	10.2	32,253	.9
	[1] 457	1,096	933,861	82,233	8.8	1,016,276	.9
1925							
Alaska	1	1	33	5	15.2	21	1.6
Arkansas	6	9	19,686	2,420	12.3	4,892	4.0
California	61	145	303,180	32,743	10.8	236,697	1.3
Colorado	1	1	35	4	11.4	15	2.3
Illinois	30	86	9,874	1,102	11.2	3,856	2.6
Kansas	10	15	19,592	2,223	11.3	27,648	.7
Kentucky	9	10	7,685	884	11.5	28,231	.3
Louisiana	31	44	43,489	4,216	9.7	113,873	.4
New York	5	5	414	46	11.1	320	1.3
Ohio	22	41	8,701	990	11.4	34,392	.3
Oklahoma	107	288	390,861	40,973	10.5	196,223	2.0
Pennsylvania	115	167	18,850	2,185	11.6	59,686	.3
Texas	51	117	214,092	22,606	10.6	149,525	1.4
West Virginia	47	141	58,201	6,759	11.6	150,626	.4
Wyoming	8	11	32,777	3,227	9.8	34,385	1.0
	[1] 450	1,081	1,127,470	120,383	10.7	1,040,390	1.1

[1] A producer operating in more than one State is counted only once.

Natural-gas gasoline produced in the United States, 1924–25, by methods of manufacture

State	Number of plants			Raw (unblended) gasoline produced (thousands of gallons)			
	Compression	Absorption including combination absorption process with compression and charcoal processes	Charcoal	Compression	Absorption including combination absorption process with compression and charcoal processes	Charcoal	Drip
1924							
Arkansas		9			17,533		
California	16	124		13,520	219,059		
Illinois	85			9,089			2
Kansas	5	9		614	11,042		2
Kentucky	3	4	3	1,128	5,182	964	
Louisiana	14	30	1	7,105	[1] 40,952	[1]	41
New York	4	1		333	144		
Ohio	30	16	1	1,268	[1] 8,170	[1]	5
Oklahoma	176	105		117,424	183,128		510
Pennsylvania	164	23	4	7,315	10,716	1,076	147
Texas	43	63		66,995	119,478		98
West Virginia	93	56	3	12,968	46,856	1,383	342
Wyoming	[2] 1 5	5		20,135	9,059		78
	639	445	12	257,894	670,678	4,064	1,225
1925							
Alaska		1			33		
Arkansas		9			19,686		
California	9	136		6,718	296,462		
Colorado	1			35			
Illinois	86			9,874			
Kansas	3	12		553	19,039		
Kentucky	2	5	3	632	6,052	1,001	
Louisiana	13	29	2	7,802	[1] 35,687	[1]	[3]
New York	4	1		304	110		
Ohio	25	15	1	838	[1] 7,863	[1]	
Oklahoma	156	130	2	114,520	275,539	802	
Pennsylvania	143	20	4	7,706	9,066	2,078	
Texas	42	75		56,067	158,025		
West Virginia	83	54	4	11,168	44,438	2,595	
Wyoming	6	5		21,995	10,782		
	573	492	16	238,212	881,681	7,577	[3]

[1] Charcoal included under combination processes in order to avoid disclosing the production of individual operators.
[2] Refrigeration.
[3] Not separately reported.

Natural-gas gasoline produced in the United States, 1911–1925, by States, in thousands of gallons

Year	Arkansas	California	Illinois	Kansas	Kentucky	Louisiana	New York	Ohio
1911		(1)	(1)		(1)		(1)	1,679
1912		1,041	(1)		(1)		(1)	1,719
1913		3,461	(1)	(1)	(1)		(1)	2,073
1914		7,581	1,164	(1)	(1)		(1)	2,440
1915		12,835	1,035	(1)	(1)	(1)	(1)	2,199
1916		17,159	2,260	215	725	2,113	(1)	2,639
1917		28,818	4,934	1,175	3,818	4,980	(1)	5,440
1918		32,269	4,575	2,390	3,331	7,021	218	6,745
1919		40,386	6,060	3,284	5,136	10,063	458	8,801
1920		48,208	6,055	4,331	4,497	10,610	411	10,016
1921		58,220	7,536	3,587	4,242	15,341	366	9,100
1922	4,289	67,120	7,760	2,856	5,205	29,406	506	8,600
1923	16,183	173,329	7,356	8,775	7,601	40,720	408	10,035
1924	17,533	232,579	9,091	11,658	7,274	48,098	477	9,443
1925	19,686	303,180	9,874	19,592	7,685	43,489	414	8,701
	57,691	1,026,186	67,700	57,863	49,514	211,841	3,258	89,630
Percentage of total	1.1	19.3	1.3	1.1	0.9	4.0	(2)	1.7

Year	Oklahoma	Pennsylvania	Texas	West Virginia	Wyoming	Undistributed	Total	Value at plant	
								Thousands of dollars	Average per gallon (cents)
1911	388	1,467		3,660		232	7,426	532	7.2
1912	1,575	2,041		5,318		387	12,081	1,157	9.6
1913	6,463	3,680		7,662		722	24,061	2,458	10.2
1914	17,278	4,612		9,278		300	42,653	3,106	7.3
1915	31,666	5,899	(1)	10,854		877	65,365	5,151	7.9
1916	48,360	9,715	1,293	18,765		249	103,493	14,331	13.8
1917	115,123	13,826	6,920	32,669		181	217,884	40,189	18.4
1918	163,701	15,775	7,326	37,604	1,579	2	282,536	50,364	17.8
1919	189,995	20,284	9,337	52,150	5,581		351,535	64,197	18.3
1920	178,857	21,151	32,956	58,941	8,711		384,744	71,788	18.7
1921	185,341	19,856	77,141	54,646	14,558		449,934	61,815	13.7
1922	189,404	18,518	95,405	56,796	19,967		505,832	72,711	14.4
1923	270,249	19,132	177,765	63,381	21,292		816,226	77,268	9.5
1924	301,062	19,254	186,571	61,549	29,272		933,861	82,233	8.8
1925	390,861	18,850	214,092	58,201	32,777	68	1,127,470	120,383	10.7
	2,090,323	194,060	808,806	531,474	133,737	3,018	5,325,101	667,683	12.5
Percentage of total	39.2	3.6	15.2	10.0	2.5	(2)	100.0		

[1] Included under "Undistributed." [2] Less than 0.1 per cent.

Natural-gas gasoline turned into crude-petroleum pipe lines in the United States, 1923–1925, by States, in thousands of gallons

State	1923	1924	1925
Alaska			20
California	50,398	87,135	107,771
Illinois	26		
Louisiana	3,049	373	136
Oklahoma	15,418	1,640	2,065
Pennsylvania	252		
Texas	3,529	347	171
West Virginia	25		
Wyoming	1,838		
	74,535	89,495	110,163

Stocks at natural-gas gasoline plants, January 1 and December 31, 1925, in thousands of gallons

State	Raw natural-gas gasoline		Blended gasoline	
	Jan. 1	Dec. 31	Jan. 1	Dec. 31
Alaska	1	1	8	8
Arkansas	290	175		
California	626	670	22	12
Colorado		34		
Illinois	130	127	2	5
Kansas	441	407	5	6
Kentucky	123	87	12	8
Louisiana	792	765		
New York	15	21	17	10
Ohio	346	253		
Oklahoma	5,688	6,979	1,129	1,737
Pennsylvania	1,138	1,348	267	301
Texas	2,566	2,632	64	400
West Virginia	1,945	1,671	184	138
Wyoming	135	150	817	700
	14,236	15,320	2,527	3,325

Natural gas produced and consumed in the United States and portion treated for recovery of natural-gas gasoline, 1911–1925

	Produced and delivered to consumers (millions of cubic feet)	Consumed (millions of cubic feet)	Treated for recovery of gasoline (millions of cubic feet)	Ratio (percentage) of natural gas treated for gasoline	
				To quantity produced and delivered to consumers	To quantity consumed
1925					
Arkansas	41,878	51,543	4,892	12	9
California [1]	187,789	187,789	236,697	126	126
Illinois	4,165	4,165	3,856	93	93
Kansas	26,917	48,684	27,648	103	57
Kentucky [2]	10,770	18,601	28,231	262	152
Louisiana	152,620	148,000	113,873	75	77
New York	[3] 6,210	16,503	320	5	2
Ohio	43,235	111,969	34,392	80	31
Oklahoma	249,285	209,458	196,223	79	94
Pennsylvania	101,632	119,475	59,686	59	50
Texas [1 2]	[4] 134,872	142,485	149,525	111	105
West Virginia [5]	180,345	74,250	150,626	84	203
Wyoming	45,539	44,427	34,385	76	77
Others	3,314	11,090	36		
	[6] 1,188,571	1,188,439	1,040,390	88	88
1911	512,993		2,476	0.5	
1912	562,203		4,688	1	
1913	581,898		9,889	2	
1914	591,867		16,895	3	
1915	628,579		24,064	4	
1916	753,170		208,705	28	
1917	795,110		429,288	54	
1918	721,001		449,109	62	
1919	745,916		480,404	64	
1920	798,210		496,431	62	
1921	662,052		465,097	70	
1922	762,546		545,139	71	
1923	[7] 1,006,976	1,006,967	875,711	87	87
1924	[8] 1,141,521	1,141,482	1,016,276	89	89

[1] Large quantities of gas both before and after the recovery of gasoline were blown in the air or unaccounted for.
[2] Quantities of natural gas were piped from other States, treated for gasoline recovery, and residue gas returned to State in which produced.
[3] Includes 68,000,000 cubic feet piped to Canada.
[4] Includes 64,000,000 cubic feet piped to Mexico.
[5] Natural gas was treated for gasoline recovery and consumed in other States.
[6] Includes 132,000,000 cubic feet piped to Canada and Mexico.
[7] Includes 9,000,000 cubic feet piped to Mexico.
[8] Includes 39,000,000 cubic feet piped to Canada and Mexico.

TALC AND SOAPSTONE

By Blanche H. Stoddard[1]

INTRODUCTION

Talc is a crystalline mineral, a hydrous silicate of magnesium, which, when pure, has the following chemical composition: Water, 4.8 per cent; magnesia, 31.7 per cent; silica, 63.5 per cent. It is exceedingly soft and occurs in nature most commonly as platy masses. Some talc has a fibrous structure, inherited from minerals from which it has been derived or which it has replaced. The color ranges from apple green to white. The most distinctive physical characteristics of talc are its color, its softness (it is easily scratched with the finger nail), and its greasy, soapy feel. The qualities that make it useful are low electrical conductivity, resistance to the action of heat, and insolubility in ordinary acids.

The United States is by far the largest producer of talc and soapstone in the world, and in 1924 produced about half of the world's output.

Talcs from different localities differ greatly in color and physical structure; so all talcs are not suitable for all uses, even though they may be considered high-grade talcs. The requirements, for instance, for high-grade powdered talc used for various purposes are many and varied; likewise, massive talc that is to be used for a certain purpose must have the qualifications necessary for that purpose. In consequence, talc from one locality is more desirable for certain purposes than is talc from another locality. For example, the fibrous talc of New York is particularly adapted for use in the paper and paint trade, and commands a higher price than talc from other States that is used for similar purposes. Maryland produces, in addition to other grades, a fine-grained talc suitable for use as a refractory. Commercial talc mined in North Carolina includes not only true talc but also pyrophyllite, an aluminum silicate that is used for some of the same purposes as talc. In 1925 pyrophyllite was mined in Moore County in that State. Talc mined in California is used chiefly in the manufacture of toilet preparations, for which purpose very high purity is demanded. Virtually all of the domestic high-grade talc suitable for making toilet powder is produced in California. Although Vermont is one of the leading producers of talc, the output from that State is not of as high grade as that from some of the other States. Nevertheless Vermont talc finds a ready market for use in the manufacture of roofing paper, rubber goods, paint, wall plaster, textiles, lubrication, foundry facings, fire-clay products, twines and cordage, and other products. Talc from Virginia is used for many of the purposes enumerated for Vermont talc.

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

TALC AND SOAPSTONE SOLD

The total quantity of talc sold by producers in the United States in 1925 was 182,256 short tons, valued at $2,011,793, an increase in quantity of 2 per cent and a decrease in value of 10 per cent, as compared with 1924. The figures for 1925 comprise 5,684 tons of crude talc, valued at $24,533; 895 tons of sawed and manufactured talc, valued at $107,691; and 175,677 tons of ground talc, valued at $1,879,569. There were 23 producers of talc in 1925, the same as in 1924.

Crude talc, other than refractory grade, was sold in California, Maryland, Vermont, and Virginia. Crude (refractory grade) was mined and sold in Maryland only. Ground talc was sold in California, Georgia, New Jersey, New York, North Carolina, Pennsylvania, Vermont, and Virginia.

Soapstone was mined, manufactured, and sold in Virginia in 1925, but the Bureau of Mines is not at liberty to publish the figures.

Most of the crude talc sold (other than refractory grade) is eventually ground; massive talc suitable for refractory purposes, which must be very fine grained, is manufactured into "lava" tips for gas burners; other high-grade massive talc is used chiefly in the manufacture of pencils, tailors' chalk, metal-workers' crayons, and in electrical insulation. As the foregoing figures show, by far the larger part of the talc mined in the United States is used in the ground form as a filler in paper, paint, and rubber-goods manufacture, in toilet preparations, for electric insulation, as a lubricant, as a bleaching, cleaning, and polishing agent, for acid proofing and fireproofing, and in many other ways.

Massive high-grade soapstone is cut into slate pencils and metal-workers' crayons, but by far the larger quantity is manufactured into laundry tubs and sinks; it is used also in chemical laboratories in the form of tables, hoods, sinks, and tanks.

Talc and soapstone sold by producers in the United States, 1916–1925, by classes

Year	Crude		Sawed and manufactured				Ground		Total	
			Talc		Soapstone					
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1916	11,824	$108,283	828	$102,674	19,127	$489,606	181,182	$1,553,240	212,961	$2,253,803
1917	12,619	69,140	5,781	176,404	19,885	402,506	180,563	1,644,828	218,848	2,292,878
1918	17,633	193,278	1,075	116,952	12,330	501,059	177,269	1,869,730	208,307	2,681,019
1919	15,625	73,437	921	147,339	16,504	530,163	151,793	1,601,736	184,843	2,352,675
1920	11,008	43,820	1,415	139,335	19,707	709,400	178,505	2,142,894	210,635	3,035,449
1921	2,150	12,911	(1)	(1)	[1] 17,423	[1] 627,826	102,413	1,115,205	121,986	1,755,942
1922	4,981	22,582	654	86,333	22,700	712,144	170,349	2,038,838	198,684	2,859,897
1923	5,706	50,125	682	114,772	22,857	932,098	167,447	1,915,258	196,692	3,012,253
1924	5,710	22,247	846	109,405	25,630	1,288,885	171,635	2,095,019	203,821	3,515,556
1925 [2]	5,684	24,533	895	107,691	(3)	(3)	175,677	1,879,569	182,256	2,011,793

[1] Talc included under "Soapstone."
[2] Figures for 1925 represent talc only.
[3] Bureau of Mines not at liberty to publish figures for soapstone.

Talc sold by producers in the United States, 1923–1925, by States

State	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
California	16,144	$224,838	16,335	$247,799	14,883	$194,975
Georgia	796	16,568	1,885	30,548	5,022	76,028
Maryland	580	25,500	3,015	29,767	2,718	35,488
New Jersey and Pennsylvania	8,182	82,597	8,281	83,296	9,206	90,502
New York	71,304	1,079,322	78,340	1,162,488	85,109	993,913
North Carolina	6,491	89,290	(1)	(1)	(1)	(1)
Vermont	67,100	533,510	61,653	573,747	54,883	533,603
Virginia	3,238	28,530	(1)	(1)	(1)	(1)
Undistributed			8,682	99,026	10,435	87,284
	173,835	2,080,155	178,191	2,226,671	182,256	2,011,793

[1] Included under "Undistributed."

FORM IN WHICH TALC IS SOLD BY PRODUCERS

The quality of the talc and the demand for the different uses determine the manner of preparation for the market. In 1925, 3 per cent was sold rough (crude) as it came from the mine, less than 1 per cent was sold as cut pencils and crayons and as blanks used for refractory purposes, and 96 per cent was ground to talc powder.

Talc sold by producers in the United States in 1925, by classes

Form in which sold	Short tons	Value	
		Total	Average
Rough (crude)	5,684	$24,533	$4.32
Sawed and manufactured [1]	895	107,691	120.33
Ground [2]	175,677	1,879,569	10.70
	182,256	2,011,793	

[1] For slate pencils and metal workers' crayons and for blanks used in making acetylene burners and other objects.

[2] For filler in paper, paint, and rubber goods, and for toilet powder, foundry facings, textiles, lubricators, electric insulation, etc.

Soapstone in rough quarry blocks or in crude state is worth $5 to $10 a ton. Reports of producers showed, however, that no soapstone was sold in that form in 1925. When sawed into slabs and manufactured into laundry tubs, laboratory table tops, and other products, its value increases greatly, and material of this class ranged in value from about $50 to $120 a short ton in 1925.

LIST OF PRODUCERS

Producers of talc and soapstone in the United States in 1925

Name and address	Location of mine
CALIFORNIA	
Ganim Gold Mines Co., Redding	2 miles west of Schilling, Shasta County.
W. S. McLean, 639 Brannan Street, San Francisco	Butte County and near Latrobe, Eldorado County.
Master Minerals Co., 1901-1929 East Slausen Avenue, Los Angeles.	Acme, San Bernardino County.
Pacific Coast Talc Co., 2149 Bay Street, Los Angeles	7 miles north of Silver Lake station, San Bernardino County.
Sierra Talc Co., 401 Equitable Bank Building, Los Angeles.	18 miles from Keeler, Inyo County.
Western Talc & Magnesite Co., Los Angeles	Tecopa, Inyo County.
GEORGIA	
Georgia Talc Co., Asheville, N. C	Foot of Cohutta Mountain, 3¼ miles southeast of Chatsworth, Murray County.
MARYLAND	
Harford Talc Co. (Inc.), 1801 Chelsea Road, Baltimore	Near Dublin, Harford County.
Maryland Mineral Co. (Inc.), Conowingo	Conowingo, Cecil County.
Herbert I. Oursler, Marriottsville	¼ mile west of Henryton, Carroll County.
NEW JERSEY	
Rock Products Co., 403 Trust Building, Easton, Pa	Above Marble Hill, on Delaware River, near Phillipsburg, Warren County.
NEW YORK	
Carbola Chemical Co. (Inc.), Natural Bridge	1¼ miles from Natural Bridge, Lewis County.
International Pulp Co., 41 Park Row, New York City	Talcville, St. Lawrence County.
W. H. Loomis Talc Corporation, 173 East Main Street, Gouverneur.	Fowler, St. Lawrence County.
NORTH CAROLINA	
Standard Mineral Co. (Inc.), Hemp	2½ miles from Hemp, Moore County.
PENNSYLVANIA	
J. O. Wagener & Co., 520 McCartney Street, Easton	On Bushkill Creek, 3 miles above Easton, Northampton County.
C. K. Williams & Co., 640 North Thirteenth Street, Easton.	Near Easton, Northampton County.
VERMONT	
American Mineral Co., 192 Bank Street, Burlington	Johnson, Lamoille County.
American Soapstone Finish Co., Chester	2½ miles from Chester, Windsor County.
Eastern Magnesia Talc Co. (Inc.), Burlington	East Granville, Addison County; Rochester, Windsor County; and Waterbury, Washington County.
Vermont Talc Co., Chester	Windham, Windham County.
VIRGINIA	
Albemarle Soapstone Corporation, Charlottesville	3 miles from Esmont, Albemarle County.
Blue Ridge Talc Co. (Inc.), Henry	¾ mile east of Henry station, Franklin County.
Bull Run Talc & Soapstone Co. (Inc.), Clifton Station	3 miles north of Clifton, Fairfax County.
Phoenix Stone Co. (Inc.), 150 Broadway, New York, N. Y.	4 miles south of Arrington, Nelson County.
Virginia Alberene Corporation, 153 West Twenty-third Street, New York, N. Y.	Schuyler, Nelson County.

REVIEW BY STATES

California.—The sales of talc by producers in California in 1925 decreased 9 per cent in quantity and 21 per cent in value as compared with 1924. The sales were made by six producers, the same number as in 1924. The Ganim Gold Mines Co., a new producer, shipped crude talc from its property 2 miles west of Schilling, Shasta County. With the exception of the Russi Soapstone Co., which did no work in 1925, the other producers remain the same as in 1924. California talc

is remarkable for its whiteness; it also has a good "slip" and is fairly free from grit or harmful impurities. These are essential qualities required of talc for toilet powder, in the manufacture of which virtually all of the talc produced in California is consumed. The average value of crude talc in California in 1925 was $6.50 a short ton f. o. b. mines, compared with $5.60 in 1924; and the average value a ton of ground talc was $14.46 f. o. b. mills, compared with $17.32 in 1924.

Georgia.—The Georgia Talc Co. was in 1925, as usual, the only producer of talc in Georgia. The output, which was more than two and one-half times that in 1924, was largely sold in the ground form at an average value of about $7 a short ton, but some of it was used in the manufacture of crayons that were sold for more than $250 a ton.

Maryland.—The total sales of talc by producers in Maryland decreased 10 per cent in quantity but increased 19 per cent in value in 1925, as compared with 1924. Three producers reported sales, the same as in 1924, namely, the Harford Talc Co. (Inc.), which mines a refractory talc; the Maryland Mineral Co. (Inc.), which shipped crude talc; and Herbert I. Oursler, who shipped talc schist.

New Jersey and Pennsylvania.—The total sales of talc by producers in New Jersey and Pennsylvania were made in the ground form from New Jersey by the Rock Products Co. and from Pennsylvania by J. O. Wagener & Co. and C. K. Williams & Co. The average value a short ton was about $10.

New York.—New York outranked all the other States in the production and sales of talc. In 1925 the sales by producers were 47 per cent of the total for the entire United States. The talc was all sold in the ground form at an average of about $12 a short ton. The sales were made by the Carbola Chemical Co. (Inc.), the International Pulp Co., and the W. H. Loomis Talc Corporation. The deposit worked by the Carbola Chemical Co. (Inc.) is associated with serpentine and limestone. The talc is highly magnesian, although some of it contains much alumina, and is different from that mined at the other two producing localities in New York; it is ground and used in making mineral paint or whitewash that can be applied as a dry powder or mixed with water in the usual way. The talc from the Arnold mine near Gouverneur, operated by the Loomis Talc Corporation, and the International mine, near Gouverneur, operated by the International Pulp Co., is a fibrous talc which is chiefly used as a filler in the paper and paint trades.

North Carolina.—The Standard Mineral Co. (Inc.) mined pyrophyllite at its property near Hemp, Moore County, and was the only producer in this State. The National Soapstone Co. (Inc.), a new operator in 1924, was succeeded by the Virginia-Carolina Soapstone Co., Roanoke, Va.; no shipments were made, but the company reported that preparations were being made to begin work in the near future.

Vermont.—Vermont was the second largest producer of talc in the United States in 1925. Sales by producers decreased in both quantity and value, compared with 1924. The talc was sold crude and ground, the larger part being sold for use as a filler in the manufacture of paper goods. A fairly large proportion was used in the manufacture of prepared roofing, and smaller amounts were used in the manufac-

ture of rubber tires and other rubber products, as a lubricant in oils and greases, for foundry facings, fire-clay products, and twines and cordage. The producers reported that the demand was fairly well sustained and the prices were stable.

Virginia.—The Blue Ridge Talc Co. (Inc.) and the Bull Run Talc & Soapstone Co. (Inc.) shipped ground talc, as usual. However, the larger part of the Virginia output is soapstone, which in 1925 was manufactured by the Albemarle Soapstone Corporation (successor to the Charlottesville Soapstone Corporation), by the Phoenix Stone Co. (Inc.) (since taken over by the Standard Soapstone Corporation), and by the Virginia Alberene Corporation. The product is manufactured into slabs, sinks, and tubs. No shipments were made in 1925 from the property formerly owned by the Phoenix Soapstone Co. near Arrington. This property has been purchased by the Armstrong Products Corporation, successor to the Virginia-Chesapeake Soapstone Co.

USES

Powdered talc and soapstone are used extensively in the paper, paint, roofing, rubber, foundry, and textile industries, and for toilet preparations. A rather unique use of powdered talc is by the farmer, who is said to dust the grains of corn before planting, in order to prevent the crows from eating them. Massive talc of the variety known as "lava" grade, free from iron and grit, with no cracks or cleavage planes, is cut into gas tips, blanks for electric insulation, and spark plugs. Only small amounts of this variety are produced in the United States. Talc is also made into crayons and pencils, is used in glass making, and as a polishing agent. Massive soapstone is manufactured into laundry tubs, trays, sinks, laboratory table tops, store fronts, bus bar compartments, electrical insulating material, acid tanks, stair treads, furnace blocks, fuse guards, tiles, treads, aquariums, switchboards, panel boards, bases, insulators, wainscoting, fireless cooker stones, hearth linings, furnace linings, and griddles.

There has been a demand among producers for more accurate information regarding the physical characteristics of talc, especially the melting point. The talc as mined contains a larger or smaller proportion of such minerals as chlorite, calcium or magnesium carbonate, iron pyrites, quartz, or other minerals. A small admixture of other minerals lowers the melting point. Material from different mines or even different parts of the same mine may differ considerably in melting point.

In investigations of talc and soapstone from different localities in Switzerland, the melting points found ranged from 1,330° to 1,480° C. The material began to turn brown at about 850°, became harder, and reached maximum hardness at 1,030° to 1,410°. Instead of using solid blocks of the natural talc or soapstone the investigators granulated the talc, mixed it with a binder, and pressed it into various forms. In some tests such material was heated to about 1,200° C., when it became a reddish brown very hard substance that could be used as a substitute for emery. Further information on the technology of talc, including data on melting points, will be found

in these publications: Der schweizerische Bergbau während des Weltkrieges, by H. Fehlman, pages 179 to 212, 1919, and "Der Talkbergbau von Disentis in Graubunden" by Arnold Heim: Zeitschrift für praktische Geologie, vol. 26, 1918, pages 2 to 11.

Some talcs expand unequally on heating and it is probable that grinding and pressing with a suitable binder would be of advantage for certain purposes. The Bureau of Mines has been experimenting on the possibility of using talc as the main ingredient in ceramic bodies of high dielectric strength and resistance to heat shock.

In New York and Vermont the supplies of talc are relatively abundant and some of the producers are conducting investigations for improving the quality of ground talc and for increasing its field of usefulness.

The advantage of such research is shown by the results already obtained by the Loomis Talc Corporation in New York in producing a better quality of material for a paper filler and in recognizing the advantage of using talc in concrete. This company has made extensive and successful experiments on the use of talc in concrete as a waterproofing agent and it has also used talc in making mortar. The use of talc in concrete opens a wide field for experiment.

The demands of the producers regarding talc are well stated in the following quotation from an article by J. B. Aikman, of the Vermont Talc Co., entitled "Talc: Its origin, properties, and uses," published in the Rose Technic, Terre Haute, Ind., May, 1925:

> While the production and consumption of ground talc of commercial grades has developed to considerable proportions in the comparatively short period of two or three decades, with good prospect of further growth in demand for it, the industry suffers from some disadvantages probably the result in part of this very fact.
>
> Of course, the chemical and physical properties of any raw material must determine its adaptability for various uses. In the case of talc, its chemical nature can not very well be modified, and, moreover, this is not necessary as it undergoes no chemical change in most uses to which it is applied.
>
> Its physical properties, however, are of the utmost importance to consumers, and these are susceptible of modification and control within reasonable limits through the methods of its preparation for the market.
>
> Unfortunately, however, little knowledge exists as to the exact chemical and physical requirements of the various manufacturing processes in which it has thus far been employed. Hence, its marketing has depended altogether too much on individual opinion, prejudice, and all around rule-of-thumb considerations.
>
> As a result it is often misjudged and made to suffer from unjust competition with other materials with which it is not fairly comparable. On the other hand, this ignorance sometimes leads to attempts to use talc for purposes for which it is unsuited with the ensuing natural damage to its prestige as a raw material.
>
> Standardized methods, acceptable alike to producers and consumers, have yet to be devised and adopted for testing those physical properties which are the foundation of its successful and advantageous sale and use. The most important of these properties are hardness, color, size of grain, shape of grain, "slip," specific gravity, character of grit, absorptive power, and behavior under heat.
>
> It is not to be understood that nothing has been done along these lines, but what has been accomplished is wholly inadequate, so it is the hope of talc producers, at least, that the problem may soon make a stronger appeal to those interested in scientific research in the field of nonmetallic minerals.

LIST OF USERS OF TALC

[From Thomas' Register of American Manufacturers, New York City, 1925-26]

California:
  Los Angeles—
    Hill, C. W., Chemical Co., 2200 Santa Fe Avenue.
    Los Angeles Chemical Co., 2200 Santa Fe Avenue.
    Master Minerals Co., 1901–1921 East Slausen Avenue.
    Nonmetallic Minerals Corporation, 1047 Richmond Street.
    Sierra Talc Co., 401 Equitable Bank Building.
    Western Talc & Magnesite Co., East Second and Los Angeles River.
  San Francisco—
    Braun-Knecht-Heimann Co., 584 Mission Street.
    Martin, Hoyt & Milne (Inc.), Merchants Exchange Building.
Georgia:
  Chatsworth—
    Empire Talc & Lumber Co.
    Georgia Talc Co.
  Rossville—Southern Lava Co. (Inc.).
Illinois:
  Chicago—
    Barrett, M. L., & Co., 233 West Lake Street.
    Clark, Frank C., 316 West Kinzie Street.
    Three Products Co., 4850 South Morgan Street.
Maryland:
  Baltimore—
    Cherokee Chemical Co., Equitable Building.
    Harford Talc Co. (Inc.), 1801 Chelsea Road.
Massachusetts: Boston—King, E. & F., & Co. (Inc.), 68 Purchase Street.
Michigan: Kalamazoo—Western Paper Makers Chemical Co.
Missouri:
  St. Louis—
    Adams, D. C., Crayon Manufacturing Co., 125 Market Street.
    St. Louis Crayon & Handle Co., 503 North Second Street.
New Jersey:
  Jersey City—
    Baker, J. T., Chemical Co., 15 North Broad Street.
    Consolidated Foundry Supply Co., 52 Newkirk Street.
New York:
  Gouverneur—Loomis, W. H., Talc Corporation.
  Natural Bridge—Carbola Chemical Co.
  New York City—
    Armstrong Products Corporation, 44 Broadway.
    Baker, H. J., & Bro., Fulton and Gold Streets.
    Binney & Smith Co., 41 East Forty-second Street.
    Bugbird, H. C., Co., 53–55 Broadway.
    Bullock, E. L., & Sons (Inc.), 9–11 Cliff Street.
    Chrystal, Chas. B., Co. (Inc.), 99 John Street.
    Doggett, Stanley (Inc.), 11 Cliff Street.
    Hammill & Gillespie, 240 Front Street.
    Innis, Speiden & Co. (Inc.), Isco Building, 46 Cliff Street.
    International Pulp Co., 41 Park Row.
    Lincks, George H., 1 Liberty Street Building.
    Lusskin, A., & Co. (Inc.), 39 Cortlandt Street.
    Mathieu, Charles, 55 Broadway.
    Merck & Co., 45 Park Place.
    Mineral Products Sales Corporation, 7 West Sixteenth Street.
    Minerals & Insulation Corporation, 104 Spring Street.
    New England Quartz Co. of New York, 152 Nassau Street.
    Osborn, C. J., Co., 132 Nassau Street.
    Reichard-Coulston (Inc.), 95 Maiden Avenue.
    Salomon, L. A., & Bro., 216 Pearl Street.
    Scheel, William H., (department A), 179 Water Street, corner Burling Slip.
    Sergeant, E. M., Co., 133 Cedar Street.

New York—Continued.
New York City—Continued.
Smith, J. Lee, & Co., 23 Jacob Street.
Speiden-Whitfield Co. (Inc.), 150 Nassau Street.
Tidewater Chemical Co. (Inc.), 31 Desbrosses Street.
Union Talc Co., 147 Nassau Street.
U. S. Talc Co., 147 Nassau Street.
Waddell, R. J., & Co. (Inc.), 52 Beekman Street.
Whittaker, Clark & Daniels (Inc.), 245 Front Street.
North Carolina:
Beta—Beta Talc Co.
Hewitts—North Carolina Talc & Mining Co.
Ohio:
Cincinnati—
Jackson, E. S., & Co., 224 East Second Street.
National Sales Co., 31 East Thirteenth Street.
Obermayer, S., Co., 647 Evans Street.
Pennsylvania:
Easton—
Rock Products Co.
Wagener, John O., & Co.
Williams, C. K., & Co.
Philadelphia—
Nevins, Samuel, Co. (Inc.), 143 North Fourth Street.
Wagner, Chas. A., Co. (Inc.), 814 Noble Street.
Rhode Island: Providence—Bush, Charles S., Co., 244 Weybosset Street.
Tennessee:
Chattanooga—
American Lava Corporation, 1429 William Street.
Lookout Paint Manufacturing Co., The.
Stewart, D. M., Manufacturing Co.
Vermont:
Burlington—Eastern Magnesia Talc Co. (Inc.), 192 Bank Street.
Chester—Vermont Talc Co.
Virginia:
Bedford—American Pigment Corporation.
Henry—Blue Ridge Talc Co. (Inc.).

IMPORTS AND EXPORTS

Talc imported for consumption in the United States, 1916–1925

Year	Crude and unground steatite and French chalk		Manufactures (except toilet preparations) wholly or partly finished [1]		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	2,027	$12,645	16,855	$218,230	18,882	$230,875
1917	2,452	10,710	16,157	258,787	18,609	269,497
1918	1,434	9,253	12,735	251,323	14,169	260,576
1919	1,641	10,105	12,961	248,899	14,602	259,004
1920	941	7,206	21,739	443,514	22,680	450,720
1921	153	2,279	11,468	239,469	11,621	241,748
1922	248	9,850	18,196	367,528	18,444	377,378
1923	560	20,653	19,405	402,238	19,965	422,891
1924	313	4,847	17,496	337,508	17,809	342,355
1925	121	6,547	20,872	443,985	20,993	450,532

[1] Prior to Sept. 22, 1922, the classification was "Talc, steatite, and French chalk—cut, ground, or washed."

Talc, ground or unground, imported into the United States 1924–25, by countries

[General imports]

Country	1924		1925	
	Short tons	Value	Short tons	Value
Austria	138	$4,411	90	$2,866
Belgium	1,106	6,680	165	1,093
Canada	7,432	88,608	9,577	114,272
China	29	13,136	65	43,025
Czechoslovakia	2	114		
France	3,091	49,861	4,668	84,469
Germany	2	1,653	19	1,393
Hongkong	[1]	184	[1]	45
India (British)	84	3,601	56	2,524
Italy	6,165	185,730	6,249	192,342
Japan	1	301	2	2,419
Netherlands			7	1,888
Palestine and Syria	[1]	4		
Spain	28	903	27	1,091
Straits Settlements			[1]	43
United Kingdom	121	1,443	65	1,868
	18,199	356,629	20,990	449,338

[1] Less than 1 ton.

Exports of talc in bulk are not recorded. The exports of "talcum and other toilet powders" in 1922 amounted to 1,821 short tons, valued at $1,397,542; in 1923, 1,907 tons, valued at $1,671,588; in 1924, 1,614 tons, valued at $1,688,211; and in 1925, 1,734 tons, valued at $1,882,196. Similar exports were not separately classified prior to 1922.

WORLD'S PRODUCTION

World's production of talc and soapstone, 1921–1925, by countries, in metric tons

[Compiled by L. M. Jones, of the Bureau of Mines]

Country	1921	1922	1923	1924	1925
Australia:					
New South Wales	61	203	207	543	711
South Australia	262	272	425	330	357
Austria (exports)	8,031	13,511	7,489	9,587	12,883
Canada	9,184	11,970	9,404	10,280	13,114
France	34,742	48,170	48,780	[1]	[1]
Germany (Bavaria)	6,619	4,513	1,907	3,997	3,461
India (British)	8,178	4,830	7,137	2,898	[1]
Italy	21,070	26,524	31,189	32,208	33,662
Japan	[1]	49,003	35,828	[1]	[1]
Norway	2,810	7,821	8,907	11,785	9,032
Spain	1,115	3,078	1,983	1,977	1,406
Sweden	[2] 1,797	[2] 2,063	[2] 2,430	[2] 2,873	[2] 2,374
Union of South Africa (Transvaal)	375	309	322	575	60
United Kingdom		51	189		[1]
United States	110,663	180,242	178,435	184,902	[3] 165,339
Uruguay (exports)	1,755	609	996	[1]	913

[1] Data not available.
[2] Exclusive of a small quantity for which value only is given.
[3] Figures represent talc only. Bureau of Mines not at liberty to publish figures for soapstone in 1925.

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POTASH

By A. T. Coons

PRODUCTION AND SALES

Production of potash in the United States during 1925 showed an increase over 1924 of 18 per cent in crude potassium salts and of 11 per cent in the potash (K_2O) content. The average per cent of K_2O in the salts produced was 49.4 in 1925, as compared with 52.4 per cent in 1924.

Sales of crude potassium salts were 41 per cent larger and the potash content of the material sold 18 per cent larger than in 1924. The total value of the potassium salts sold in 1925 was 43 per cent more than in 1924, and the value per unit (20 pounds of K_2O) was 47 cents, as compared with 39 cents in 1924. For the first time since 1919 the sales were larger than the production.

The stocks remaining in producers' hands decreased 4.5 per cent.

Three less plants reported production in 1925 than in 1924, two less reported sales, and four less reported stocks remaining on hand. Because of these decreases the usual tables of sales by States and by sources are omitted in order to avoid disclosing individual production. A summary of production, sales, and producers' stocks of potassium salts in the United States for the past 10 years is given in the following table:

Potassium salts produced, sold, and in stock in the United States, 1916–1925

Year	Production			Sales[1]				Stocks		
	Number of plants	Crude potassium salts (short tons)	Content of K_2O (short tons)	Number of plants	Crude potassium salts (short tons)	Content of K_2O (short tons)	Value f. o. b. plant	Number of plants	Crude potassium salts (short tons)	Content of K_2O (short tons)
1916	70	35,739	9,720	(2)	35,739	9,720	$4,242,730	(2)	(2)	(2)
1917	95	126,961	32,573	(2)	126,961	32,573	13,980,577	(2)	(2)	(2)
1918	128	207,686	54,803	(2)	140,343	38,580	15,839,618	(2)	67,343	16,223
1919	102	116,634	32,474	(2)	166,063	45,728	11,271,269	(2)	(2)	(2)
1920	66	166,834	48,077	64	139,963	41,444	7,463,026	38	32,378	8,999
1921	20	25,485	10,171	23	10,337	4,408	447,859	30	32,925	12,625
1922	12	25,176	11,714	16	22,028	11,313	463,512	16	30,100	11,653
1923	12	39,029	20,215	11	35,164	19,281	784,671	14	34,794	12,363
1924	[3]12	[3]43,734	[3]22,903	9	37,492	21,880	842,618	[3]11	[3]32,389	[3]10,770
1925	9	51,565	25,448	7	52,823	25,802	1,204,024	7	[4]30,919	10,276

[1] Production and sales were practically the same in 1916 and 1917, and no distinction was made between them.
[2] Figures not available.
[3] Revised figures.
[4] Of this quantity 212 tons were lost by leaching, etc.

A comparison of the figures for 1925 with those for 1918, when domestic production was at its height, shows that in 1918 the output of crude potassium salts was four times as large as in 1925, whereas the potash (K_2O) content of the material produced in 1918 was only about twice that for 1925.

PRODUCING LOCALITIES

In 1925 the potassium salts produced were from natural brines, from flue dusts of blast furnaces, and from the waste from molasses distillation. Although no potassium-bearing materials from cement dust were made there were some sales from stocks. The American Trona Corporation, the chief American producer of potassium salts, also recovered borax and other natural sodium salts as by-products from its plant at Trona (Searles Lake), San Bernardino County, Calif. Its output of potassium salts increased 17 per cent in 1925, and virtually all was marketed. The product sold by this company has a higher content of potash (K_2O) than that of any other company, although the per cent in 1925 (56.5) was lower than in 1924 (61.25). Also, in California the Whitney Chemical Co., Leslie (P. O. San Mateo), San Mateo County, and the Oliver Chemical Co., Mount Eden, Alameda County, produced small amounts of potassium salts as by-product in the manufacture of magnesium chloride. At Leslie the output was sold as "muriate," but no sales of potassium salts were made from Mount Eden. The plant of the United States Industrial Chemical Co. (address, 110 East Forty-second Street, New York N. Y.), at Baltimore, Md., was the second largest producer of potassium salts in 1925. The salts averaged 33 per cent K_2O, were mixtures of sulphates, chlorides, and small amounts of carbonates, and were recovered from the waste from molasses distillation. This is the second year of potash production for this company, and its sales, although somewhat less than its total production, much exceeded those for 1924. Its stocks on hand January 1, 1926, were, however, considerable. Potassium salts (chiefly sulphates), from flue dusts of blast furnaces, were produced and sold at the Lucy, Isabella, and Neville furnaces of the Carnegie Steel Co. (Pittsburgh, Pa.). The Lavino Furnace Co., Philadelphia, Pa., also produced small amounts of sulphate and chloride (muriate) at blast furnaces at Sheridan, Lebanon County, Pa., and Reusens, Campbell County, Va., but made no sales in 1925.

The Santa Cruz Portland Cement Co., San Francisco, Calif., discontinued the recovery of potassium salts from cement dust at its Davenport (Calif.) plant and disposed of all stocks.

No potassium salts made from alunite were reported in 1925. The Aluminum-Potash Co. of America, Bay Point, Calif., reported that it was running an experimental plant for working out a process for extracting potassium and aluminum salts from alunite obtained at Winkelman (P. O. Marysvale), Utah. The United States Fertilizer Chemical Co. (Inc.), New York City, began operations at Marysvale, Utah, with the object of obtaining potassium sulphate from roasted alunite.

The Moludite Co., San Francisco, Calif., reported that potash obtained as a by-product from the treatment of seaweed would probably be produced by a subsidiary company during 1926.

Considerable experimental work was done in 1925 by the Electro Co., Odessa, Del., on the recovery of potash from greensand marl, but no material was marketed commercially.

The results of investigations of potash deposits in Texas, New Mexico, and other potash-bearing localities as carried on by the Bureau of Mines, the Geological Survey, and other Government bureaus are published in separate pamphlets and are not reviewed here.

IMPORTS AND EXPORTS[1]

Imports of potash materials are shown in the following tables. The materials are classified as salts used chiefly in the fertilizer industry and as those used chiefly in the chemical industries. The former class, which includes kainite, manure salts, muriate, and sulphate, constituted 93 per cent of the total imports.

[1]Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Potash materials imported for consumption in the United States, 1913, 1924, and 1925[1]

Material	Approximate K_2O content (per cent)	1913				1924				1925			
		Short tons	Content of K_2O		Value	Short tons	Content of K_2O		Value	Short tons	Content of K_2O		Value
			Short tons	Percentage of total			Short tons	Percentage of total			Short tons	Percentage of total	
Used chiefly in fertilizers:													
Kainite	12.4	521,176	64,626	23.7	$2,201,730	175,513	21,764	10.9	$923,740	204,767	25,391	9.8	$1,173,125
Manure salts	20.0	250,529	50,106	18.4	2,245,509	258,998	51,800	25.8	2,278,484	430,340	86,068	33.3	3,676,620
Muriate (chloride)	50.0	237,630	118,815	43.6	7,075,745	144,623	72,312	36.1	3,982,288	180,351	90,176	34.9	5,193,866
Sulphate	48.6	44,349	21,554	7.9	1,677,429	84,780	41,203	20.6	2,858,063	77,226	37,532	14.6	2,686,408
		1,053,684	255,101	93.6	13,200,413	663,914	187,079	93.4	10,042,575	892,684	239,167	92.6	12,730,019
Used chiefly in chemical industries:													
Bicarbonate	46.0	223	103		20,968	185	85	.1	25,754	168	77		21,100
Bitartrate (argols)	20.0	14,499	2,900	1.1	2,779,180	8,416	1,683	.8	1,103,296	12,356	2,471	1.0	1,694,538
Bitartrate (cream of tartar)	25.0	75	19		28,314	766	192	.1	165,421	158	40		43,525
Bromide	39.6					468	185	.1	124,414	119	47		62,028
Carbonate, crude	61.0	4,858	2,963	1.1	272,973								
Carbonate, crude or black salts	50.0	344	172	.1	17,852	3,569	2,177	1.1	290,396	3,963	2,417	1.0	349,286
Carbonate, refined	67.0	6,145	4,117	1.5	393,284								
Caustic	80.0	4,324	3,459	1.3	342,056	6,315	5,052	2.5	698,635	6,138	4,910	1.9	734,967
Chlorate and perchlorate	38.0	596	226	.1	64,468	3,760	1,429	.7	310,643	5,890	2,238	.9	479,222
Chromate and bichromate	40.0	9	4		1,819	5	2		1,924	2	1		778
Cyanide	70.0	735	514	.2	216,844	1,411	988	.5	232,971	1,149	804	.3	216,683
Ferricyanide (red prussiate)	42.0	34	14		12,035	41	17		25,308	103	43		30,291
Ferrocyanide (yellow prussiate)	44.0	1,706	751	.3	388,379	132	58		40,032	113	50		27,238
Iodide	28.0					(2)	(2)		210	(2)	(2)		263
Nitrate (saltpeter), crude	40.0	4,826	1,930	.7	261,078	772	309	.2	54,628	9,404	3,762	1.5	447,717
Nitrate (saltpeter), refined	46.0	203	93		22,602	2,279	1,048	.5	209,805	4,631	2,130	.8	484,660
Permanganate	29.0	273	79		38,188	87	25		13,940	44	13		8,203
Rochelle salt	22.0	54	12		13,412	104	23		24,003	176	39		38,419
All other	50.0					26	13		4,172	15	8		2,829
		38,904	17,356	6.4	4,873,452	28,336	13,286	6.6	3,325,552	44,429	19,050	7.4	4,641,747
Grand total		1,092,588	272,457	100.0	18,073,865	692,250	200,365	100.0	13,368,127	937,113	258,217	100.0	17,371,766

[1] The figures in this table were compiled by J. A. Dorsey from the records of the Bureau of Foreign and Domestic Commerce by recalculation from pounds to short tons and to actual potash (K_2O) and by giving the totals for calendar years instead of fiscal years. The tons are calculated to the nearest even unit, and the values are those given in the original records, so that the value given for a high-priced commodity received in small quantity may not be strictly applicable to the quantity given in tons. Furthermore, the values are those placed on the commodities by the shippers and represent the values at point of shipment and do not agree with the market quotations in this country.

[2] Quantity of iodide imported was as follows: 1924, 47 pounds; 1925, 43 pounds.

In 1913 the last normal year before the war, the United States imported 272,457 short tons of K_2O; in 1925 the imports were 258,217 tons, or 95 per cent of that amount, and 29 per cent more than the imports in 1924. The imports in 1925 were ten times the production of the United States. The combined imports and domestic production in 1925 were somewhat larger than imports in 1913, when the total supply was imported.

Potash (K_2O) content of potash-bearing materials imported for consumption in the United States, 1914–1925, in short tons

1914	207,089	1918	7,957	1922	201,415
1915	48,867	1919	39,619	1923	209,950
1916	7,885	1920	224,792	1924	200,365
1917	8,100	1921	78,698	1925	258,217

The following table indicates the amount of potash-bearing materials imported in 1925 and the countries from which last shipment was made. Germany and France supplied virtually all of the crude salts and much the larger part of the refined salts imported.

Potash materials imported into the United States in 1925, in short tons[1]

[General imports. The figures in parentheses in the column headings indicate the estimated percentage of contained K_2O]

Country	Muriate (chloride) (50)	Sulphate (48.6)	Manure salts (20)	Kainite (12.4)	Bitartrate		Caustic (80)	Carbonate (61)	Cyanide (70)	Nitrate (saltpeter), crude (40)	Chlorate and perchlorate (36)	All other (50)	Total	
					Argols or wine lees (20)	Cream of tartar (25)							Short tons	Value
Algeria and Tunisia					494								494	$69,443
Argentina					1,390								1,390	111,226
Australia	(2)												(2)	9
Belgium	16,326	2,067	24,648	6,116			(2)	3		164	8	294	49,626	896,761
Canada	2,579	3	2,433		17			19	913			1	5,965	256,136
Chile					78					7,001	44		7,123	315,294
China	1												1	30
Cuba			24										24	230
Czechoslovakia							155	206	67			28	456	58,868
Dominican Republic			1,232										1,232	8,748
Finland											538		538	46,194
France	39,027	8,650	106,721	77,258	6,009	101			110		28	472	238,376	3,847,501
Germany	120,794	66,294	290,371	121,393	39	1	5,793	3,009	33	2,239	4,817	3,877	618,665	10,740,136
Greece					231								231	30,402
Hongkong	1	(2)									(2)	(2)	1	156
Italy	449		329		1,039	67							1,884	214,617
Japan					55							(2)	55	7,532
Netherlands	890	212	4,165		140		23	404	5			361	6,200	156,973
Palestine and Syria					54								54	6,840
Portugal					558								558	79,884
Spain	284				2,229							12	2,525	294,971
Sweden							63					28	91	32,061
Switzerland											470	(2)	470	72,930
United Kingdom			417				94	307	16			67	901	73,250
	180,351	77,226	430,340	204,767	12,333	169	6,128	3,948	1,149	9,404	5,917	5,128	936,860	17,320,192
Content of potash (K_2O)	90,176	37,532	86,068	25,391	2,467	42	4,902	2,408	804	3,762	2,130	2,564	258,246	

[1] The figures in this table were compiled by J. A. Dorsey from the records of the Bureau of Foreign and Domestic Commerce by recalculation to short tons and to the actual potash (K_2O) and by giving the totals by the calendar year instead of the fiscal year. The tons are calculated to the nearest even unit. The data represent general imports and include both imports for immediate consumption and those going to warehouses, which may or may not be entered for consumption during the year. They differ slightly from the figures in the preceding table of imports, which represents imports for consumption.

[2] Less than 1 ton.

Some refined potassium salts are exported from the United States.

Potassium salts exported from the United States, 1924–25

Salt	1924			1925		
	Gross weight (short tons)	K_2O (short tons)	Value	Gross weight (short tons)	K_2O (short tons)	Value
Potassium bichromate	585	187	$100,017	231	74	$35,795
Potassium chlorate	281	107	31,577	1,924	846	362,945
All other potassium salts	1,057	465	169,442			
	1,923	759	301,036	2,155	920	398,740

CONSUMPTION

The consumption of potash in the United States in 1925, as indicated by the imports plus the sales of domestic products, was 989,936 short tons of material containing 284,019 short tons of K_2O, valued at $18,575,790. This was an increase of 28 per cent in quantity of K_2O and of 31 per cent in value, as compared with 1924. Of these totals 5 per cent of the material containing 9 per cent of the K_2O and representing 6 per cent of the total value was produced in this country. About 94 per cent of the total supply was used in the manufacture of fertilizers.

MARKET CONDITIONS

Market conditions showed little change from those of the preceding year. As cotton, tobacco, and "truck" are the chief potash-consuming crops, the States east of Mississippi River and south of Ohio River and the Mason and Dixon line are the chief users of potash, although in the Northeastern States potash is used for growing potatoes and other vegetables. The prices at which foreign potash has been available have continued to curb American production and particularly to discourage the launching of new enterprises.

PRICES

Prices of potash in the United States are controlled by quotations on imported potash made by the Potash Importing Corporation of America and the United States bureau of the Société Commerciale des Potasses d'Alsace, representing, respectively, the German and French potash-producing interests. There were two advances in the price of potassium salts during 1925. The first, in April, affected only manure salts; the 20 per cent grade and the 30 per cent grade, in both bags and bulk, were advanced, respectively, 45 cents and 30 cents a ton. The second advance took effect October 1. In both bags and bulk the advances per ton were: Kainite, 14 to 16 per cent, 25 cents; kainite, 12.4 per cent, 25 cents; manure salts, 20 per cent, 35 cents; manure salts, 30 per cent, 50 cents; and muriate, 80 to 85 per cent, 35 cents. No changes were made in the prices of the higher grades, including potassium-magnesium sulphate (double manure salts), or in the prices of sulphate (90 to 95 per cent). The prices

per ton ruling at the end of 1925 for the different grades of salts were as follows:

Sulphate, 90 to 95 per cent	in bags	$45.85
	in bulk	44.60
Muriate, 80 to 85 per cent	in bags	34.90
	in bulk	33.65
Potash-magnesia sulphate (double manure salts), 48 per cent	in bags	26.35
	in bulk	25.10
Manure salts, 30 per cent	in bags	20.00
	in bulk	18.00
Manure salts, 20 per cent	in bags	13.35
	in bulk	11.35
Kainite, 14 to 16 per cent	in bags	10.50
	in bulk	8.50
Kainite, 12.4 per cent	in bags	10.00
	in bulk	8.00

All quotations were made c. i. f. eastern United States ports, and prices were guaranteed against sellers' decline until April, 1926. Discounts, based on tons of actual potash (K_2O), ranged from 5 per cent on purchases of 5 tons to 10 per cent on purchases of 500 tons. Discounts of 6 per cent, 4 per cent, and 2 per cent on net prices were also made on orders for shipments delivered between May 1 and September 15.

SUMMARY OF WORLD'S PRODUCTION

The following table, compiled by L. M. Jones, of the Bureau of Mines, lists the countries that in the last five years have produced potassium salts, and gives the available figures for their production of crude salts and K_2O content. The list of countries differs somewhat from that given in the table of imports, because in that table some of the countries from which the imports came were not themselves producers but received their supply from other countries. Both tables, however, clearly show the predominance of Germany and Alsace as producers of potash.

World's production of potash minerals and content of K_2O, 1921–1925, in metric tons

Country and mineral	1921		1922		1923	
	Output	K_2O content	Output	K_2O content	Output	K_2O content
Australia:						
New South Wales, alunite	528	45	188	23	1,014	82
South Australia, alunite	15		97			
China [1]	608	(2)	493	(2)	479	(2)
France (Alsace), crude salts	884,140	[3] 144,836	1,326,859	[3] 211,675	1,577,512	[3] 262,170
Germany, crude salts	9,196,142	[3] 933,400	13,079,447	[3] 1,301,900	11,348,424	[3] 1,059,700
India (British), nitrate of potash	16,149	6,460	11,860	4,744	8,692	3,542
Italy:						
Alunite	1,171	125			135	(2)
Leucite rock	14,805	(2)	18,000	(2)	8,728	(2)
Japan, alunite	(2)	(2)	1,178	100	19,255	(2)
Poland:						
Kainite	182	18	2,520	15,479	22,128	29,404
Sylvinite	15,329	1,550	43,563		39,375	
Spain, nitrate of potash	(2)	(2)	(2)	(2)	76	51
United States, crude salts	23,119	9,227	22,839	10,627	35,406	18,339

[1] Exports. [2] Data not available. [3] Figures relate to merchantable products.

World's production of potash minerals and content of K_2O, 1921–1925, in metric tons—Continued

Country and mineral	1924		1925	
	Output	K_2O content	Output	K_2O content
Australia: New South Wales, alunite	1,024	89	540	45
China [1]	587	(2)	336	(2)
France (Alsace)	[3] 1,059,893	[3] 271,624	[3] 1,182,908	[3] 310,168
Germany, crude salts	8,091,117	[3] 895,600	12,044,000	[3] 1,572,000
India (British), nitrate of potash	8,680	3,472	(2)	(2)
Italy:				
Alunite	852	(2)	1,500	(2)
Leucite rock	15,600	(2)	226,000	(2)
Japan, alunite	10	(2)	(2)	(2)
Poland:				
Kainite	23,545	2,355	62,823	(2)
Sylvinite	57,875	15,626	115,980	(2)
Spain, nitrate of potash	25	16	(2)	(2)
United States, crude salts	[4] 39,675	[4] 20,777	46,779	23,086

[1] Exports. [2] Data not available. [3] Figures relate to merchantable products. [4] Revised figures.

STONE

By A. T. Coons

SUMMARY OF PRODUCTION

The total stone sold or used by producers in the United States in 1925 amounted to 12 per cent more in quantity and nearly 8 per cent more in value than in 1924. All varieties quarried made increases in both quantity and value.

The tables in this report give the quantities sold or used by producers and the values f. o. b. at quarries and mills, so far as these are obtainable. Stone quarried and used by the producer is considered as sold and is included in the figures given for sales. The figures do not, however, include the stone made into abrasives (such as grindstones, etc.), glass sand, lime, or cement and reported in terms of finished product. These products are treated in the chapters on abrasives, sand and gravel, lime, and cement; but an estimate of the total amount of limestone used for all purposes is given on page 244.

Stone sold or used by producers in the United States, 1916–1925, by kinds

[Quantities approximate]

Year	Granite		Basalt and related rocks (trap rock)		Sandstone		Marble	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1916	9,270,800	$17,456,838	10,233,640	$7,666,297	4,681,590	$5,603,778	409,970	$7,033,171
1917	5,564,200	15,544,957	9,103,580	7,570,885	3,880,500	5,512,421	310,130	6,330,387
1918	3,827,400	14,466,423	6,859,200	7,782,280	2,858,100	4,529,298	305,720	5,496,389
1919	4,221,220	19,345,714	7,410,770	8,944,686	2,623,270	5,283,842	333,400	8,042,297
1920	4,760,000	24,954,908	9,219,200	12,260,148	3,343,000	7,310,290	431,500	11,069,585
1921	4,752,180	20,592,217	8,524,480	11,450,899	2,640,460	6,425,339	315,400	8,580,416
1922	5,913,120	21,125,869	10,032,900	12,600,611	3,388,130	7,521,044	427,870	10,534,671
1923	7,300,130	29,704,796	10,674,470	13,539,648	4,349,270	9,174,706	562,560	12,863,974
1924	6,883,860	28,772,161	11,671,500	14,679,523	3,894,690	10,142,099	516,000	13,302,235
1925	8,074,200	30,531,347	11,842,110	14,770,042	4,479,330	10,920,016	564,150	13,882,457

Year	Limestone		Other stone [1]		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	67,235,000	$41,309,599			91,831,000	$79,069,683
1917	63,481,500	46,263,379	1,234,990	$993,642	83,574,900	82,215,671
1918	53,868,200	49,453,006	844,740	973,034	68,563,360	82,700,430
1919	49,759,800	53,171,701	1,190,540	1,920,903	65,539,000	96,709,143
1920	59,290,000	75,655,260	1,483,300	2,291,769	78,527,000	133,541,960
1921	45,621,000	57,749,594	1,685,220	2,163,801	63,538,740	106,962,266
1922	58,928,660	68,397,927	1,520,880	1,886,806	80,211,560	122,066,928
1923	76,701,360	89,620,007	3,730,870	4,567,110	103,318,660	159,470,241
1924	75,894,430	89,868,956	4,323,640	5,105,139	103,184,120	161,870,113
1925	85,649,440	98,008,028	5,242,140	6,104,902	115,851,370	174,216,792

[1] Includes mica schist, conglomerate, argillite, various light-colored volcanic rocks, serpentine not used as marble, and such other stone as can not be properly classed in any of the main groups.

As usual, the demand for stone during the year varied with the use of the stone and with local conditions. The general demand for building stone, curbstone, rubble, crushed stone for concrete and road metal and railroad ballast, fluxing stone, refractory stone, agricultural limestone, and for many manufacturing uses was active, but the demand for monumental and memorial stone, flagstones, paving blocks, and riprap was less than in 1924. Operating costs in 1925 were about the same as in 1924, with a tendency toward a lower price for almost all stone products. There was virtually no labor trouble. Conditions at the quarries were about the same in the two years. Effort to standardize products and improve quarry methods in order to meet keen competition was continued.

Stone sold or used by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building stone.....cubic feet	28,352,380	$33,175,656	30,695,310	$35,444,809
Approximate equivalent in short tons	2,211,750		2,392,420	
Monumental stone.....cubic feet	4,750,980	15,305,386	4,371,380	14,404,339
Approximate equivalent in short tons	393,550		363,060	
Paving blocks.....number	41,037,570	3,578,676	40,143,220	3,680,687
Approximate equivalent in short tons	375,860		380,710	
Curbing.....cubic feet	3,815,850	3,468,821	5,075,620	4,313,446
Approximate equivalent in short tons	296,070		393,460	
Flagging.....cubic feet	810,440	560,156	762,280	562,344
Approximate equivalent in short tons	59,840		55,790	
Rubble.....short tons	864,790	1,160,258	1,197,170	2,060,868
Riprap.....do	3,265,130	3,634,439	3,079,270	2,794,379
Crushed stone.....do	68,198,440	73,861,576	75,672,930	80,508,429
Furnace flux (limestone and marble).....do	19,690,490	15,839,868	22,860,890	17,344,190
Refractory stone (ganister, mica schist, and dolomite).....short tons	1,093,940	1,389,413	1,261,130	1,548,190
Manufacturing industries (limestone and marble).....short tons	4,733,770	4,410,559	5,171,520	4,941,669
Other uses [1].....do	2,000,490	5,485,305	3,023,020	6,613,442
Total (quantities approximate in short tons)	103,184,120	161,870,113	115,851,370	174,216,792

[1] Chiefly agricultural limestone. (See pp. 238, 242, and 243.)

Building stone.—Aggregate sales of building stone of all kinds increased 8 per cent in quantity and 7 per cent in value over 1924. Granite, limestone, and marble showed about the same increases in quantity, 10 to 11 per cent. Miscellaneous varieties of stone for building also increased, but basalt and sandstone decreased somewhat. Stone for rough construction and for rough and sawed architectural work increased and cut stone decreased. The average value per cubic foot of all building stone in 1925 was slightly less than in 1924. The figures for building stone by kinds, as reported in 1924 and 1925, are as follows:

Building stone sold or used by producers in the United States, 1924 and 1925, by kinds

Kind	Rough				Finished				Total	
	Constructional		Architectural		Sawed [1]		Cut [1]			
	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value
1924										
Granite	5,183,660	$849,980	860,300	$772,953	[1] 301,820	[1] $617,527	[1] 498,770	[1] $3,423,316	6,844,550	$5,663,776
Basalt	595,320	77,145							595,320	77,145
Marble			946,500	2,080,559	719,880	1,378,838	939,800	5,339,822	2,606,180	8,799,219
Limestone	2,691,870	304,911	5,012,520	3,231,613	4,106,510	4,447,016	2,645,420	7,822,140	14,456,320	15,805,680
Sandstone	1,424,640	155,802	568,560	322,877	1,082,680	1,193,709	474,650	1,058,063	3,550,530	2,730,451
Miscellaneous	299,480	99,385							299,480	99,385
	10,194,970	1,487,223	7,387,880	6,408,002	6,210,890	7,637,090	4,558,640	17,643,341	28,352,380	33,175,656
1925										
Granite	5,351,870	737,836	1,179,720	1,008,019	[1] 390,330	[1] 950,481	[1] 593,480	[1] 4,118,241	7,515,400	6,814,577
Basalt	532,000	59,985							532,000	59,985
Marble			1,057,380	2,363,966	907,100	1,942,014	900,820	5,294,131	2,865,300	9,600,111
Limestone	3,186,900	335,842	5,728,830	3,661,276	4,897,650	5,278,552	2,170,420	6,816,409	15,983,800	16,092,079
Sandstone	1,052,600	114,055	908,360	506,591	1,093,810	1,231,090	419,390	961,358	3,474,160	2,813,094
Miscellaneous	324,650	64,963							324,650	64,963
	10,448,020	1,312,681	8,874,290	7,539,852	7,288,890	9,402,137	4,084,110	17,190,139	30,695,310	35,444,809

[1] For granite, sawed stone corresponds to dressed stone for construction work (walls, foundations, bridges) and cut stone to architectural stone for high-class buildings.

Monumental stone.—Stone for monumental and memorial work decreased 8 per cent in quantity and 6 per cent in value as compared with 1924. Granite for this purpose decreased 9 per cent in quantity and marble 4 per cent. California, Texas, and Wisconsin were the only important States reporting increased sales of monumental granite.

Paving blocks, curbstone, flagstone, and crushed stone.—Street and road material in general showed increased sales in 1925, although paving blocks decreased 2 per cent in quantity and flagstones 6 per cent. The decrease in paving blocks was in sandstone blocks (30 per cent), as granite blocks increased somewhat. Stone for curbing increased 33 per cent in quantity. The total quantity of crushed stone sold increased 11 per cent over 1924. Crushed stone for concrete and road work in 1925 increased 9 per cent in quantity and crushed stone reported as railroad ballast increased 22 per cent over 1924.

Fluxing stone.—Stone used by blast furnaces, open-hearth steel works, smelters, and other metallurgic plants for fluxing increased 16 per cent in quantity.

Refractory stone.—Stone (dolomite, quartzite, and mica schist) reported for refractory use increased 15 per cent. The raw dolomite reported for the manufacture of refractories in 1925 increased 35 per cent. Exact figures for raw dolomite for this purpose are hard to obtain, because sales to furnaces and smelters tend to cause it to be reported as fluxing stone. Operators, who both quarry and dead-burn or sinter dolomite, reported 392,147 short tons of the sintered material for 1925—an increase of 19 per cent. Quartzite (ganister) used in the manufacture of refractory brick, for furnace or converter lining, and for the manufacture of ferrosilicon increased 7 per cent in quantity in 1925, and mica schist used as furnace and kiln lining increased 34 per cent.

Manufacturing industries and "other uses."—The total quantity of stone for manufacturing industries and "other uses" increased 22 per cent in 1925, although a few of the individual products decreased.

Stone sold or used by producers in the United States, 1924 and 1925, by States

State	1924			1925		
	Number of active plants	Short tons (approximate)	Value	Number of active plants	Short tons (approximate)	Value
Alabama	28	1,253,990	$2,003,521	21	1,392,790	$2,142,595
Alaska	1	(1)	(1)	1	(1)	(1)
Arizona	10	160,350	176,768	13	435,060	306,763
Arkansas	17	[2] 542,190	[2] 620,626	13	374,940	448,313
California	146	7,192,730	8,635,602	165	9,096,170	10,341,815
Colorado	46	825,940	1,221,574	47	[2] 674,610	[2] 881,756
Connecticut	41	[2] 1,849,670	[2] 2,251,566	41	1,830,210	2,655,339
Delaware	3	93,130	243,279	3	118,940	219,054
District of Columbia	5	8,370	15,760	2	(1)	(1)
Florida	29	2,973,360	2,942,778	33	4,026,790	4,687,107
Georgia	29	565,630	4,472,628	32	734,140	4,971,493
Hawaii	14	[2] 442,240	[2] 773,906	9	348,150	675,677
Idaho	27	211,030	318,588	31	[2] 317,470	[2] 424,008
Illinois	64	8,640,960	7,959,934	72	8,576,830	7,722,683
Indiana	91	[2] 3,824,440	[2] 17,269,407	105	[2] 4,455,310	[2] 18,140,974

[1] Included under "Undistributed."

[2] To avoid disclosing confidential information, certain State totals are slightly incomplete, the figures not included being combined under "Undistributed."

Stone sold or used by producers in the United States, 1924 and 1925, by States—Con.

State	1924			1925		
	Number of active plants	Short tons (approximate)	Value	Number of active plants	Short tons (approximate)	Value
Iowa	33	607,530	$712,540	26	805,140	$870,230
Kansas	40	[2] 766,120	[2] 960,626	48	[2] 705,780	[2] 958,779
Kentucky	74	2,173,700	2,786,249	81	1,703,010	2,127,504
Louisiana	2	[1]	[1]	1	[1]	[1]
Maine	44	[2] 263,720	[2] 2,411,938	54	[2] 361,570	[2] 2,870,442
Maryland	39	[2] 1,100,410	[2] 1,913,395	43	[2] 1,136,880	[2] 1,853,881
Massachusetts	98	[2] 1,936,520	[2] 6,063,048	95	[2] 2,209,560	[2] 6,640,333
Michigan	30	10,023,440	5,943,680	30	11,598,680	6,671,804
Minnesota	55	804,280	4,220,658	51	753,740	3,784,252
Mississippi	2	[1]	[1]	2	[1]	[1]
Missouri	120	[2] 2,320,010	[2] 4,961,333	131	[2] 2,796,510	[2] 5,662,835
Montana	19	251,730	235,580	24	[2] 237,860	[2] 222,566
Nebraska	9	222,030	285,977	7	135,910	225,669
Nevada	7	202,270	167,324	5	102,710	127,359
New Hampshire	26	[2] 93,340	[2] 1,556,598	26	[2] 130,120	[2] 1,712,138
New Jersey	52	2,149,270	3,326,298	46	2,335,820	3,656,943
New Mexico	8	654,610	432,023	4	121,950	92,034
New York	136	7,557,320	10,981,814	141	[2] 8,869,200	[2] 12,358,238
North Carolina	36	1,340,840	3,133,510	30	[2] 1,565,690	[2] 3,478,855
Ohio	135	10,455,060	11,280,865	139	[2] 12,010,510	[2] 13,084,572
Oklahoma	36	[2] 1,303,030	[2] 1,499,297	28	1,418,960	1,613,436
Oregon	93	1,592,530	1,624,602	114	1,690,930	1,858,644
Pennsylvania	444	[2] 14,559,490	[2] 17,966,836	440	[2] 16,124,590	[2] 18,870,945
Porto Rico	11	90,830	206,011	9	73,460	113,515
Rhode Island	22	[2] 171,350	[2] 742,701	21	[2] 153,230	[2] 724,428
South Carolina	11	824,030	1,527,114	13	833,100	1,315,613
South Dakota	15	[2] 166,970	[2] 362,508	27	211,880	456,342
Tennessee	55	[2] 1,437,280	[2] 3,867,072	41	[2] 1,835,150	[2] 4,334,891
Texas	32	2,207,050	1,886,798	36	[2] 2,503,300	[2] 2,076,560
Utah	17	640,100	446,490	21	878,270	459,722
Vermont	56	[2] 295,880	[2] 9,066,073	47	[2] 283,030	[2] 8,958,846
Virginia	61	2,223,620	2,566,575	98	[2] 2,670,660	[2] 3,224,259
Washington	63	[2] 778,460	[2] 1,596,088	51	576,690	1,042,165
West Virginia	57	2,618,290	3,040,154	62	3,348,200	3,349,143
Wisconsin	124	[2] 2,221,910	[2] 4,087,133	134	[2] 2,541,360	[2] 4,208,201
Wyoming	17	234,620	354,057	10	[2] 133,410	[2] 245,058
Undistributed		312,450	751,211		613,100	1,349,013
	2,630	103,184,120	161,870,113	2,724	115,851,370	174,216,792

[1] Included under "Undistributed."
[2] To avoid disclosing confidential information, certain State totals are slightly incomplete, the figures not included being combined under "Undistributed."

EXPORTS AND IMPORTS[1]

Value of stone exported from the United States, 1916–1925

Year	Marble and stone, unmanufactured	All other, manufactured	Total	Year	Marble and stone, unmanufactured	All other, manufactured	Total
1916	$403,303	$1,077,447	$1,480,750	1921	$576,905	$1,697,570	$2,274,475
1917	572,097	1,108,185	1,680,282	1922	681,658	903,102	1,584,760
1918	552,261	1,208,164	1,760,425	1923	625,442	783,195	1,408,637
1919	770,392	1,508,997	2,279,389	1924	499,602	448,731	948,333
1920	774,442	2,158,764	2,933,206	1925	507,391	725,677	1,233,068

[1] The tables of exports and imports were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Stone exported from the United States in 1925, by countries

Country	Marble				Other building or monumental stone		Other manufactures of stone (including paving blocks and curbing)		Total value
	Blocks (rough or dressed)		Manufactures						
	Cubic feet	Value	Short tons	Value	Cubic feet	Value	Short tons	Value	
North America:									
Canada	45,418	$196,394	67	$9,043	333,616	$243,223	84,780	$443,159	$891,819
Central America—									
British Honduras			(1)	85			5	1,153	1,238
Costa Rica							3	806	806
Guatemala			5	1,396			1	164	1,560
Honduras			16	1,334			4	1,496	2,830
Nicaragua			(1)	69			6	415	484
Panama			2	125			34	5,492	5,617
Salvador			4	1,210			4	1,033	2,243
Mexico	290	2,597	7	1,796	2,638	3,342	25,102	27,087	34,822
Newfoundland and Labrador	1,874	10,645	3	166			128	12,759	23,570
West Indies—									
British—									
Barbados			2	697	85	185	4	1,467	2,349
Bermuda			11	1,394			8	1,111	2,505
Jamaica	2	12	(1)	100			38	5,960	6,072
Trinidad and Tobago							(1)	92	92
Other			2	920			8	1,597	2,517
Cuba	5,447	34,686	2	1,039	800	10,500	150	18,462	64,687
Dominican Republic			3	559	5	31	12	2,588	3,178
Dutch							(1)	176	176
Haiti	56	143	3	519			4	698	1,360
Virgin Islands of the United States	12	60	1	318			(1)	76	454
Other							2	180	180
South America:									
Argentina			(1)	134			1	1,028	1,162
Brazil							2	1,650	1,650
Chile	10	30	1	244			18	1,109	1,383
Colombia			1	298			27	9,284	9,582
Ecuador							9	929	929
Peru	429	2,333	1	155			7	2,245	4,733
Venezuela			3	1,160	300	340	5	1,161	2,661
Other			(1)	19			20	4,261	4,280
Europe:									
France			(1)	50			18	5,261	5,311
Germany			(1)	200			54	21,722	21,922
Italy					4	50			50
Netherlands							80	11,200	11,200
United Kingdom	62	312	72	4,923	929	647	137	8,514	14,396
Other			(1)	75			288	23,550	23,625
Asia:									
China			(1)	100			25	1,991	2,091
India (British)							85	9,633	9,633
Japan							94	10,628	10,628
Philippine Islands			(1)	57			46	3,683	3,740
Other			10	1,144			206	7,356	8,500
Africa:									
British South Africa			(1)	43			103	15,843	15,886
Other			(1)	47			2	489	536
Oceania:									
Australia	247	1,804	11	886			104	19,645	22,335
New Zealand							44	7,733	7,733
Other	2	57	(1)	110			2	376	543
Grand total	53,849	249,073	227	30,415	338,377	258,318	111,670	695,262	1,233,068

[1] Less than 1 ton.

Value of stone imported for consumption in the United States, 1916–1925

1916	$959,367	1921	$1,253,959
1917	681,475	1922	1,895,912
1918	268,577	1923	2,641,337
1919	787,961	1924	2,437,654
1920	1,795,575	1925	2,909,887

Stone imported for consumption in the United States, 1924 and 1925, by kinds

Kind	1924		1925	
	Quantity	Value	Quantity	Value
Marble, breccia, and onyx:				
In blocks, rough, etc.—cubic feet	654,510	$1,278,696	642,113	$1,326,863
Sawed—do	196	655	113	576
Slabs or paving tiles—superficial feet	309,999	97,935	671,561	210,072
All other manufactures		205,353		257,382
Mosaic cubes of marble or onyx:				
Loose		13,016		14,919
Attached to paper		142		346
		1,595,797		1,810,158
Granite:				
Dressed		302,927		359,364
Rough—cubic feet	196,176	255,225	213,594	273,298
		558,152		632,662
Stone (other):				
Dressed		22,044		12,996
Rough (monumental or building stone)—cubic feet	152,431	122,309	212,953	167,306
Rough (other)		139,352		286,765
		283,705		467,067
Grand total		2,437,654		2,909,887

Marble, breccia, and onyx (rough and manufactured) imported into the United States, 1924 and 1925, by countries

[General imports]

Country	1924				1925			
	Rough marble, breccia, and onyx		Manufactured	Total value	Rough marble, breccia, and onyx		Manufactured	Total value
	Cubic feet	Value			Cubic feet	Value		
Canada	4	$27	$18,281	$18,308			$6,378	$6,378
Cuba			261	261	1,818	$3,911	920	4,831
Guatemala	556	2,301		2,301	6,896	21,098		21,098
Mexico	5,506	19,917	602	20,519	2,767	16,163		16,163
Total North America	6,066	22,245	19,144	41,389	11,481	41,172	7,298	48,470
Belgium	39,912	64,850	23,941	88,791	65,586	109,131	51,031	160,162
France	25,291	47,277	46,124	93,401	37,317	56,935	43,488	100,423
Germany	145	507	32,483	32,990	4,676	12,100	28,036	40,136
Greece	5,807	21,659	80	21,739	6,133	28,657		28,657
Italy	575,758	1,116,997	177,308	1,294,305	510,219	1,058,822	307,404	1,366,226
Netherlands			544	544	1,015	1,983		1,983
Spain			536	536	739	1,216	15,929	17,145
United Kingdom			6,924	6,924	173	1,528	9,513	11,041
Other Europe [1]	1,707	5,955	6,408	12,363	1,253	3,141	10,727	13,868
Total Europe	648,620	1,257,245	294,348	1,551,593	627,111	1,273,513	466,128	1,739,641
China			1,542	1,542			6,265	6,265
Japan			621	621			525	525
Other countries [2]	1,208	3,309	1,821	5,130	1,798	5,032	2,453	7,485
	1,208	3,309	3,984	7,293	1,798	5,032	9,243	14,275
Grand total	655,894	1,282,799	317,476	1,600,275	640,390	1,319,717	482,669	1,802,386

[1] 1924: Austria, Azores, etc., Czechoslovakia, Esthonia, Gibraltar, Hungary, Ireland, Rumania, Scotland, Sweden, Switzerland, and Turkey. 1925: Austria, Czechoslovakia, Esthonia, Norway, Portugal, Switzerland, and Turkey.

[2] 1924: Algeria and Tunisia, Dutch West Indies, Honduras, Hongkong, India (British), Java and Madura, Palestine, Peru, and Uruguay. 1925: Algeria and Tunisia, Egypt, Hongkong, India (British), Palestine and Syria, Uruguay, and Virgin Islands of the United States.

Value of building or monumental stone (exclusive of marble, breccia, and onyx) and other classes of stone imported into the United States, 1924 and 1925, by countries

[General imports]

Country	1924			1925		
	Building or monumental stone	Other stone	Total	Building or monumental stone	Other stone	Total
North America:						
Canada	$65,431	$110,932	$176,363	$55,601	$258,157	$313,758
Cuba	15		15			
Mexico	24		24			
	65,470	110,932	176,402	55,601	258,157	313,758
Europe:						
Austria	2		2	8		8
Belgium	24		24	499	111	610
Czechoslovakia	26,069		26,069	33,700		33,700
Denmark		201	201	3,197		3,197
Finland	29,749		29,749	50,059		50,059
France	13,212		13,212	23,056	20	23,076
Germany	138,246	693	138,939	177,352	8,672	186,024
Italy	149,042	25	149,067	217,261	426	217,687
Netherlands		8,368	8,368	12	10,601	10,613
Norway	10,453	30	10,483	15,756		15,756
Portugal	2,367		2,367	12,652		12,652
Russia	95		95			
Spain	7		7	3,638	19	3,657
Sweden	179,950	1,164	181,114	175,299	3	175,302
United Kingdom—						
England	18,410	26,542	44,952	106,904	29,926	136,830
Scotland	98,049		98,049			
	665,675	37,023	702,698	819,393	49,778	869,171
Other countries [1]	3,368	1,258	4,626	2,642	567	3,209
Total imports	734,513	149,213	883,726	877,636	308,502	1,186,138

[1] 1924: Africa (British South), Brazil, Ceylon, China, Hongkong, and Japan. 1925: British West Indies, China, Egypt, Hongkong, India (British), Japan, and Palestine and Syria.

PRODUCTION, BY KINDS AND STATES

GRANITE

Granite sold or used by producers in 1925 increased 17 per cent in quantity and 6 per cent in value over 1924. Building stone increased 10 per cent in quantity and crushed stone 21 per cent. Granite for curbing, rubble, riprap, and paving blocks also increased, but there was a decrease in monumental stone.

Granite sold or used by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building stone (rough and dressed)—cubic feet	6,844,550	$5,663,776	7,515,400	$6,814,577
Approximate equivalent in short tons	556,530		624,150	
Monumental stone—cubic feet	3,520,530	11,447,196	3,195,290	10,805,432
Approximate equivalent in short tons	289,140		263,170	
Paving—number of blocks	37,599,100	3,284,395	37,674,930	3,485,714
Approximate equivalent in short tons	343,210		357,960	
Curbing—linear feet	2,251,760	1,513,137	2,779,570	1,839,830
Approximate equivalent in short tons	113,550		144,330	
Rubble—short tons	235,150	243,156	270,410	328,379
Riprap—do	480,560	504,076	567,060	625,203
Crushed stone—do	4,806,570	5,935,591	5,825,550	6,510,900
Other uses—do	59,150	180,834	21,570	121,312
Total (quantities approximate, in short tons)	6,883,860	28,772,161	8,074,200	30,531,347

Granite sold or used by producers in the United States, 1924 and 1925, by States

[Quantities approximate]

State	1924		1925	
	Short tons	Value	Short tons	Value
Arizona	66,310	$30,890	350,320	$168,494
Arkansas	15,010	17,239	(1)	(1)
California	1,905,240	2,675,522	2,242,130	3,368,233
Colorado	2,220	152,209	63,470	213,256
Connecticut	72,030	340,785	56,500	764,657
Delaware	93,130	243,279	118,940	219,054
District of Columbia	8,370	15,760	(1)	(1)
Georgia	308,730	1,438,281	461,440	1,798,353
Idaho	26,560	26,560	57,000	57,000
Maine	225,570	2,311,686	322,040	2,774,707
Maryland	253,580	557,685	275,030	519,071
Massachusetts	581,470	3,930,877	597,310	4,156,762
Minnesota	66,560	2,606,536	61,200	2,121,850
Missouri	15,230	108,084	14,150	137,348
Montana	25,820	58,355	21,750	47,965
Nevada	(1)	(1)		
New Hampshire	93,340	1,556,598	130,120	1,712,138
New Jersey	(1)	(1)	(1)	(1)
New York	68,360	211,766	96,850	349,443
North Carolina	1,141,270	2,766,740	1,200,640	2,864,490
Oklahoma	28,350	159,070	44,900	194,005
Oregon	18,970	32,800	29,350	25,437
Pennsylvania	281,500	768,307	308,930	812,810
Rhode Island	138,720	668,606	94,280	583,960
South Carolina	824,030	1,527,114	833,100	1,315,613
South Dakota	6,110	120,395	1,480	157,967
Texas	20,420	170,237	7,860	178,375
Utah	(1)	(1)	(1)	(1)
Vermont	112,480	4,081,009	105,260	3,705,624
Virginia	203,850	294,199	222,530	335,221
Washington	29,790	87,751	46,050	93,993
Wisconsin	204,030	1,746,546	245,760	1,746,784
Undistributed	46,810	67,275	65,810	108,737
	6,883,860	28,772,161	8,074,200	30,531,347

[1] Included under "Undistributed."

Granite sold or used by producers in the United States in 1925, by States and uses

State	Number of active plants	Building						Monumental				Paving blocks	
		Rough				Dressed		Rough		Dressed			
		Construction		Architectural									
		Short tons	Value	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Number	Value
Arizona	5			(1)	(1)			(1)	(1)				
Arkansas	2	(1)	(1)										
California	36	(1)	(1)	(2)	(2)	[3] 177, 690	[3] $1, 226, 775	86, 800	$172, 221	37, 420	$310, 908	(1)	(1)
Colorado	10							(2)	(2)	[3] 29, 300	[3] 150, 519		
Connecticut	18	15, 050	$17, 952	[3] 83, 660	[3] $527, 305	(3)	(3)	22, 370	76, 355	7, 830	65, 922	(1)	(1)
Delaware	3	(1)	(1)					(1)	(1)				
District of Columbia	2												
Georgia	23	(1)	(1)			(1)	(1)	[3] 109, 720	[3] 292, 818	(3)	(3)	2, 516, 060	$156, 663
Idaho	4												
Maine	48	5, 260	7, 830	354, 230	282, 041	39, 810	316, 134	137, 110	142, 094	22, 330	97, 609	17, 346, 420	1, 661, 048
Maryland	12	109, 930	198, 307	[3] 70, 160	[3] 61, 950	(3)	(3)			(1)	(1)	(1)	(1)
Massachusetts	53	31, 650	27, 280	207, 520	204, 700	255, 120	1, 018, 213	337, 820	555, 135	46, 460	442, 990	6, 188, 830	708, 287
Minnesota	24			23, 050	21, 042	72, 300	515, 317	186, 950	934, 353	73, 670	596, 238	130, 000	11, 600
Missouri	6							12, 480	36, 993			1, 022, 000	94, 755
Montana	13					(1)	(1)	[3] 6, 030	[3] 18, 123	(3)	(3)		
New Hampshire	24	3, 580	5, 461	62, 200	61, 883	106, 610	667, 838	113, 170	223, 543	35, 040	216, 355	3, 024, 780	227, 473
New Jersey	1												
New York	14	15, 200	25, 207	10, 820	12, 559	13, 500	114, 956	[3] 5, 660	[3] 36, 105	(3)	(3)	(1)	(1)
North Carolina	21	5, 070	30, 055	[3] 125, 470	[3] 300, 450	(3)	(3)	[3] 81, 540	[3] 356, 015	(3)	(3)	2, 527, 820	169, 598
Oklahoma	7			(1)	(1)			17, 740	46, 654	10, 920	96, 520		
Oregon	3									(1)	(1)		
Pennsylvania	36	217, 510	378, 777	[3] 248, 460	[3] 118, 610	(3)	(3)	21, 490	69, 079	12, 140	110, 671	138, 720	12, 254
Rhode Island	16	(1)	(1)	(1)	(1)			167, 770	445, 969				
South Carolina	13			[3] 13, 900	[3] 12, 900	(3)	(3)	(1)	(1)			(1)	(1)
South Dakota	3							(2)	(2)	[3] 17, 880	[3] 157, 967		
Texas	11			[3] 19, 190	[3] 18, 312	(3)	(3)	[3] 61, 370	[3] 158, 816	(3)	(3)		
Utah	2							(1)	(1)	(1)	(1)		
Vermont	32	(1)	(1)	[3] 67, 020	[3] 137, 944	(3)	(3)	[3] 1, 187, 760	[3] 3, 552, 585	(3)	(3)	(1)	(1)
Virginia	13	6, 010	9, 428					(1)	(1)			(1)	(1)
Washington	7					800	4, 840	3, 350	4, 595	5, 840	58, 227		
Wisconsin	23	(1)	(1)			(1)	(1)	17, 500	39, 169	99, 660	1, 053, 938	3, 691, 220	366, 986
Undistributed		35, 800	37, 539	5, 210	6, 144	206, 810	446, 828	218, 160	265, 921	2, 010	21, 025	1, 089, 080	77, 050
	485	445, 060	737, 836	1, 179, 720	1, 008, 019	983, 810	5, 068, 722	2, 737, 050	6, 866, 532	458, 240	3, 938, 900	37, 674, 930	3, 485, 714

State	Curbing		Rubble		Riprap		Crushed stone				Other uses		Total	
							Concrete and road metal		Railroad ballast					
	Linear feet	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons (approximate)	Value
Arizona							(1)	(1)	334,480	$144,940			350,320	$168,494
Arkansas			(1)	(1)	(1)	(1)	(1)	(1)					(1)	(1)
California	3,660	$5,552			347,810	$354,981	1,427,330	$989,260	434,820	298,863	(1)	(1)	2,242,130	3,368,233
Colorado			(1)	(1)			(1)	(1)	21,010	6,737			63,470	213,256
Connecticut	18,240	19,242			(1)	(1)	20,710	39,947					56,500	764,657
Delaware	(1)	(1)			(1)	(1)	(1)	(1)			(1)	(1)	118,940	219,054
District of Columbia			(1)	(1)									(1)	(1)
Georgia	1,345,380	543,521	84,310	$41,671	(1)	(1)	259,890	320,145	(1)	(1)	(1)	(1)	461,440	1,798,353
Idaho							57,000	57,000					57,000	57,000
Maine	123,500	133,917			10,590	7,878	88,310	126,156					322,040	2,774,707
Maryland			5,580	24,160	(1)	(1)	78,040	111,423	(1)	(1)			275,030	519,071
Massachusetts	407,260	493,215	111,430	146,976	20,460	32,040	274,180	522,454			3,690	$5,472	597,310	4,156,762
Minnesota			(1)	(1)	(1)	(1)	29,610	42,555					61,200	2,121,850
Missouri			(1)	(1)	(1)	(1)	(1)	(1)					14,150	137,348
Montana					(1)	(1)	14,620	15,162	(1)	(1)	(1)	(1)	21,750	47,965
New Hampshire	236,980	179,018	(1)	(1)	(1)	(1)	48,620	123,436			1,410	2,235	130,120	1,712,138
New Jersey							(1)	(1)					(1)	(1)
New York							41,550	54,672	(1)	(1)	(1)	(1)	96,850	349,443
North Carolina	613,720	434,739	11,630	33,872	15,410	11,477	962,010	1,357,012	127,320	118,928	7,280	52,344	1,200,640	2,864,490
Oklahoma			8,920	9,404	(1)	(1)	(1)	(1)					44,900	194,005
Oregon							(1)	(1)	(1)	(1)			29,350	25,437
Pennsylvania	(1)	(1)	(1)	(1)	(1)	(1)	53,240	80,593	(1)	(1)	(1)	(1)	308,930	812,810
Rhode Island	(1)	(1)			(1)	(1)	73,930	125,484	(1)	(1)	(1)	(1)	94,280	583,960
South Carolina	(1)	(1)	13,280	20,036	(1)	(1)	668,640	886,553	(1)	(1)			833,100	1,315,613
South Dakota													1,480	157,967
Texas					(1)	(1)					(1)	(1)	7,860	178,375
Utah													(1)	(1)
Vermont													105,260	3,705,624
Virginia	(1)	(1)	(1)	(1)	(1)	(1)	181,970	252,145	(1)	(1)	(1)	(1)	222,530	335,221
Washington					(1)	(1)	(1)	(1)					46,050	93,993
Wisconsin	(1)	(1)	(1)	(1)	(1)	(1)	159,610	235,767			1,140	10,173	245,760	1,746,784
Undistributed	30,830	30,626	35,260	52,260	172,790	218,827	220,520	346,114	248,140	255,554	8,050	51,088	65,810	108,737
	2,779,570	1,839,830	270,410	328,379	567,060	625,203	4,659,780	5,685,878	1,165,770	825,022	[4] 21,570	[4] 121,312	8,074,200	30,531,347

[1] Included under "Undistributed." [2] Rough stone included under dressed stone. [3] Dressed stone included under rough stone.
[4] Includes 7,390 tons of Durax paving blocks, valued at $58,843, made in Massachusetts, North Carolina, and Wisconsin.

Monumental granite sold by the quarrymen at Quincy, Mass., 1916–1925

Year	Number of active plants	Short tons (approximate)	Value	Year	Number of active plants	Short tons (approximate)	Value
1916	10	62,000	$460,263	1921	6	14,000	$311,178
1917	10	29,000	398,196	1922	6	16,000	341,601
1918	5	26,000	336,843	1923	6	27,150	596,709
1919	8	32,000	614,005	1924	6	26,630	527,915
1920	8	27,000	674,233	1925	7	26,500	509,329

Monumental granite sold by the quarrymen in the Barre district, Vermont, 1918–1925

Year	Cubic feet	Value	Year	Cubic feet	Value
1918	1,369,000	$2,308,757	1922	453,000	$1,395,911
1919	1,376,000	3,623,055	1923	1,208,010	3,300,805
1920	1,147,800	3,957,881	1924	1,025,930	3,366,497
1921	686,947	2,417,024	1925	981,560	3,192,282

Through the kindness of R. E. Mitchell, secretary of the Barre Granite Manufacturers Association, the following figures covering the entire granite industry at Barre are given to supplement the figures of sales reported to the Bureau of Mines by the quarrymen:

Estimated output of monumental granite in Barre district, Vermont, 1922–1925

	1922	1923	1924	1925
Total quarry output, rough stock—cubic feet	620,626	1,254,714	1,127,850	1,161,684
Shipped out of Barre district in rough—do	172,884	251,996	225,570	232,336
Manufactured in Barre district—do	447,742	1,002,718	902,280	929,348
Light stock consumed in district—do	279,841	626,701	563,925	580,843
Dark stock consumed in district—do	167,901	376,017	338,355	348,505
Number of cutters in district	1,000	1,250	1,000	1,100
Average daily wage	$8.00	$8.00	$8.00	$8.00
Average number of days worked	70	270	250	275
Total pay roll for year	$560,000	$2,700,000	$2,000,000	$2,420,000
Estimated overhead	280,000	1,350,000	1,000,000	1,210,000
Estimated value of light stock	940,265	2,256,123	2,352,585	2,613,789
Estimated value of dark stock	805,924	1,940,246	2,023,223	1,873,215
Estimated polishing cost	311,500	600,000	585,500	735,000
Output from saws	160,000	250,000	248,000	245,000
Total value of granite	3,057,689	9,096,369	8,209,308	9,097,004

The figures of quantity submitted by Mr. Mitchell represent the stone carried from the quarries. The figures of the Bureau of Mines represent the sales of stone as reported by the quarrymen.

BASALT AND RELATED ROCKS (TRAP ROCK)

Basalt and related rocks sold or used by producers in 1925 increased slightly in both quantity and value over 1924. Crushed stone, which is the chief product, increased 2 per cent in quantity and 1 per cent in value. Under "Other" is reported 66,120 short tons of roofing granules, valued at $549,210, made from altered diabase (greenstone). Included under granite and miscellaneous varieties of stone is also a small amount of "roofing granules" which increases the total amount of roofing granules made from stone to 72,560 tons, valued at $596,217. Besides these "roofing granules" others of slate (including slate "flour") amounting to 497,700 tons, valued at $3,210,904, were sold by producers in 1925.

Basalt and related rocks (trap rock) sold or used by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building stone, cubic feet	595,320	$77,145	532,000	$59,985
Approximate equivalent in short tons	51,370		46,030	
Paving blocks, number			78,000	3,560
Approximate equivalent in short tons			780	
Rubble, short tons	6,560	6,610	47,930	95,210
Riprap, do	319,140	473,210	252,600	354,960
Crushed stone, do	11,194,130	13,584,764	11,419,220	13,695,249
Other (principally roofing granules), do	100,300	537,794	75,550	561,078
Total (quantities approximate, in short tons)	11,671,500	14,679,523	11,842,110	14,770,042

Basalt and related rocks (trap rock) sold or used by producers in the United States, 1924 and 1925, by States

[Quantities approximate]

State	1924		1925	
	Short tons	Value	Short tons	Value
California	1,672,020	$1,545,633	2,090,720	$1,759,580
Colorado	(1)	(1)	(1)	(1)
Connecticut	1,762,620	1,883,625	1,702,000	1,764,645
Hawaii	442,240	773,906	348,150	675,677
Idaho	118,430	97,316	193,590	219,755
Maryland	496,670	860,471	471,940	752,147
Massachusetts	1,001,380	1,222,666	1,104,180	1,291,751
Michigan	103,860	331,302	110,400	323,991
Minnesota	225,910	381,164	164,840	288,893
Missouri	(1)	(1)		
Montana	(1)	(1)	(1)	(1)
Nevada	21,220	29,706		
New Jersey	1,808,260	2,806,365	2,011,150	3,140,696
New Mexico	(1)	(1)		
New York	(1)	(1)	(1)	(1)
Oregon	1,438,810	1,424,619	1,368,090	1,512,728
Pennsylvania	1,269,190	1,798,564	1,307,930	1,883,646
Texas	(1)	(1)	(1)	(1)
Virginia	(1)	(1)	71,490	108,724
Washington	668,410	829,632	456,670	445,212
Wisconsin	(1)	(1)	(1)	(1)
Undistributed	642,480	694,554	440,960	602,597
	11,671,500	14,679,523	11,842,110	14,770,042

[1] Included under "Undistributed."

Basalt and related rocks (trap rock) sold or used by producers in the United States in 1925, by States and uses

State	Number of active plants	Building, rough construction		Rubble and riprap		Crushed stone				Other uses		Total	
						Concrete and road metal		Railroad ballast					
		Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons (approximate)	Value
California	20	(1)	(1)	(1)	(1)	1,620,160	$1,388,227	462,020	$333,315	(1)	(1)	2,090,720	$1,759,580
Colorado	1					(1)	(1)					(1)	(1)
Connecticut	15	(1)	(1)			1,598,380	1,667,839	(1)	(1)	(1)	(1)	1,702,000	1,764,645
Hawaii	9	(1)	(1)	92,650	$242,370	254,480	431,323			(1)	(1)	348,150	675,677
Idaho	17					193,590	219,755					193,590	219,755
Maryland	9	(1)	(1)	(1)	(1)	198,640	380,309	231,860	324,177			471,940	752,147
Massachusetts	19	(1)	(1)	(1)	(1)	1,084,630	1,268,970	17,370	19,486			1,104,180	1,291,751
Michigan	6					(1)	(1)			(1)	(1)	110,400	323,991
Minnesota	5			(1)	(1)	74,890	98,142	(1)	(1)	(1)	(1)	164,840	288,893
Montana	1			(1)	(1)							(1)	(1)
New Jersey	32	(1)	(1)	(1)	(1)	1,772,720	2,833,286	237,710	305,661	(1)	(1)	2,011,150	3,140,696
New York	2					(1)	(1)	(1)	(1)			(1)	(1)
Oregon	104	(1)	(1)	77,060	78,836	1,221,350	1,374,941	68,430	55,326	(1)	(1)	1,368,090	1,512,728
Pennsylvania	29	15,720	$28,034	(1)	(1)	986,010	1,294,453	277,480	347,349	(1)	(1)	1,307,930	1,883,646
Texas	1					(1)	(1)	(1)	(1)			(1)	(1)
Virginia	5					71,490	108,724					71,490	108,724
Washington	35			74,540	78,140	355,460	353,148	(1)	(1)	(1)	(1)	456,670	445,212
Wisconsin	1					(1)	(1)					(1)	(1)
Undistributed		30,310	31,951	56,280	50,824	343,660	521,346	348,890	369,472	76,330	$564,638	440,960	602,597
	311	46,030	59,985	300,530	450,170	9,775,460	11,940,463	1,643,760	1,754,786	[2] 76,330	[2] 564,638	11,842,110	14,770,042

[1] Included under "Undistributed."
[2] Included 66,120 tons of roofing granules, valued at $549,210, from California, Michigan, Minnesota, and Pennsylvania.

MARBLE

Sales of marble increased 9 per cent in quantity and 4 per cent in value over 1924. The quantity of marble for building increased 10 per cent, and that for monumental work decreased 4 per cent. The quantity of marble sold as by-products or as waste material from the quarries increased 20 per cent.

Marble sold by producers in the United States, 1924 and 1925, by uses

Use		1924		1925	
		Quantity	Value	Quantity	Value
Building stone:					
Rough—					
Exterior	cubic feet	202,150	$416,216	318,300	$664,791
Interior	do	744,350	1,664,343	739,080	1,699,175
Finished—					
Exterior	do	650,790	2,204,872	827,390	2,894,895
Interior	do	1,008,890	4,513,788	980,530	4,341,250
Total exterior	do	852,940	2,621,088	1,145,690	3,559,686
Total interior	do	1,753,240	6,178,131	1,719,610	6,040,425
Total building stone	do	[1] 2,606,180	[1] 8,799,219	[1] 2,865,300	[1] 9,600,111
Monumental stone:					
Rough	do	239,760	257,795	214,270	177,159
Finished	do	990,690	3,600,395	961,820	3,421,748
Total monumental stone	do	[1] 1,230,450	[1] 3,858,190	[1] 1,176,090	[1] 3,598,907
Total building and monumental	cubic feet	3,836,630	12,657,409	4,041,390	13,199,018
	(approximate short tons	324,210		333,130	
Marble for other uses (by-products)	short tons	191,790	644,826	231,020	683,439
Total marble, approximate short tons		516,000	13,302,235	564,150	13,882,457

[1] Building-stone figures may be somewhat less than given and monumental stone somewhat more, as some of the Tennessee producers were unable to divide their product according to use.

Marble sold by producers in the United States, 1924 and 1925, by States

[Quantities approximate]

State	1924		1925	
	Short tons	Value	Short tons	Value
Alabama	33,140	$626,370	[1] 37,520	[1] $637,498
Alaska	[2] 10,360	[2] 466,920	[1] 8,880	[1] 342,041
Arizona	(2)	(2)	(1)	(1)
Arkansas	3,360	26,481	(1)	(1)
California	12,650	141,048	8,780	135,160
Colorado	(2)	(2)	(1)	(1)
Georgia	71,040	2,651,217	82,930	2,787,988
Maryland	[2] 14,200	[2] 188,813	[1] 25,650	[1] 213,699
Massachusetts	7,300	232,718	5,280	189,574
Missouri	64,580	1,237,149	62,280	1,442,567
New Jersey	(2)	(2)	(1)	(1)
New York	64,220	532,358	72,270	510,900
North Carolina	(2)	(2)	(1)	(1)
Pennsylvania	(2)	(2)	(1)	(1)
Tennessee	97,950	2,332,337	112,840	2,478,563
Utah	(2)	(2)	(1)	(1)
Vermont	137,200	4,866,824	147,720	5,144,467
Virginia	(2)	(2)	(1)	(1)
Washington	(2)	(2)		
	516,000	13,302,235	564,150	13,882,457

[1] Alabama includes Arkansas; Alaska includes Arizona, Colorado, and Utah; Maryland includes New Jersey, North Carolina, Pennsylvania, and Virginia.

[2] Alaska includes Arizona, Colorado, Utah, and Washington; Maryland includes New Jersey, North Carolina, Pennsylvania, and Virginia.

SERPENTINE

The figures showing sales of serpentine (verde antique) for interior and exterior building, dimension stone, and by-products are included in the figures for marble, but those showing sales of serpentine as crushed stone for road metal, ballast, riprap, and other low-grade material are included in the figures for "miscellaneous" stone. The States represented in the production of serpentine in 1925 are Maryland, Massachusetts, New Jersey, Pennsylvania, and Vermont.

Serpentine (verde antique) sold by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building and ornamental stone ---------- cubic feet	88,460	$501,835	67,370	$502,248
Rough construction, crushed, etc ---------- short tons	8,640	89,347	9,130	49,357
	----------	591,182	----------	551,605

LIMESTONE

The quantity of limestone sold or used by producers in 1925, as given in this report, was 13 per cent more than in 1924. There was an increase of 11 per cent in the quantity of limestone for building and also in that for crushed stone for road metal and concrete and railroad ballast, 16 per cent in fluxing stone, and 44 per cent in stone for liming land. Other increases were in limestone for curbing, riprap, glass factories, and in the chief miscellaneous industries consuming limestone, as noted in the table on page 244. Other products, including rubble and stone for paper mills, sugar factories, calcium carbide works, and for the manufacture of carbonic acid, decreased.

Limestone sold or used by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building stone [1] ---------- cubic feet	14,456,320	$15,805,680	15,983,800	$16,092,079
Approximate equivalent in short tons	1,097,530	----------	1,204,550	----------
Curbing, flagging, and paving ---------- cubic feet	69,010	78,264	129,730	98,587
Approximate equivalent in short tons	5,560	----------	11,730	----------
Rubble ---------- short tons	392,180	623,844	324,630	513,387
Riprap ---------- do	1,695,280	1,513,443	1,847,330	1,406,714
Crushed stone ---------- do	46,446,680	47,594,437	51,337,840	52,446,110
Fluxing stone ---------- do	19,683,150	15,827,464	22,840,500	17,318,366
Sugar factories ---------- do	618,230	1,055,505	471,580	796,974
Glass factories ---------- do	177,260	286,164	324,160	412,832
Paper mills ---------- do	138,280	236,834	109,730	198,691
Agriculture ---------- do	1,352,600	2,046,860	1,954,480	2,880,589
Other uses [2] ---------- do	4,287,680	4,800,461	5,222,910	5,843,699
Total (quantities approximate, in short tons)	75,894,430	89,868,956	85,649,440	98,008,028

[1] Figures for building stone include small amounts of monumental stone.
[2] See table on p. 244 for further distribution of limestone products.

Limestone sold or used by producers in the United States, 1924 and 1925, by States

[Quantities approximate]

State	1924		1925	
	Short tons	Value	Short tons	Value
Alabama	1,170,640	$1,253,971	1,224,710	$1,250,742
Arizona	(1)	(1)	(1)	(1)
Arkansas	145,710	125,215	50,710	51,829
California	249,860	540,777	264,690	545,749
Colorado	561,060	656,193	529,810	575,562
Connecticut	(1)	(1)	(1)	(1)
Florida	2,891,610	2,717,486	3,795,420	4,348,234
Georgia	185,860	383,130	189,770	385,152
Idaho	11,730	25,253	9,270	31,053
Illinois	8,577,220	7,916,883	8,518,410	7,686,005
Indiana	3,824,440	17,269,407	4,455,310	18,140,974
Iowa	607,530	712,540	805,140	870,230
Kansas	766,120	960,626	705,780	958,779
Kentucky	2,153,610	2,629,588	1,658,240	1,983,941
Louisiana	(1)	(1)	(1)	(1)
Maine	38,150	100,252	39,530	95,735
Maryland	350,160	495,239	389,910	582,663
Massachusetts	75,560	216,392	164,340	347,177
Michigan	9,901,910	5,578,642	11,460,000	6,327,634
Minnesota	457,980	1,101,607	458,920	1,218,608
Mississippi	(1)	(1)	(1)	(1)
Missouri	2,240,200	3,616,100	2,720,080	4,082,920
Montana	206,150	152,644	210,760	160,207
Nebraska	222,030	285,977	135,910	225,669
Nevada	(1)	(1)	(1)	(1)
New Jersey	282,700	390,837	237,100	338,037
New Mexico	480,720	288,446	(1)	(1)
New York	6,969,060	8,469,975	8,488,910	10,149,440
North Carolina	114,820	188,470	148,530	238,310
Ohio	10,040,910	8,534,401	11,493,960	9,617,437
Oklahoma	1,271,930	1,334,647	1,372,040	1,414,241
Oregon	5,710	17,473	(1)	(1)
Pennsylvania	11,558,110	12,778,612	13,033,880	13,630,050
Porto Rico	90,830	206,011	73,460	113,515
Rhode Island	(1)	(1)	(1)	(1)
South Dakota	39,360	60,713	73,080	97,880
Tennessee	1,339,330	1,534,735	1,722,310	1,856,328
Texas	1,872,530	1,483,862	2,495,440	1,898,185
Utah	639,220	408,195	877,240	441,529
Vermont	46,200	118,240	30,050	108,755
Virginia	1,928,510	2,200,417	2,252,300	2,611,157
Washington	46,420	108,155	44,280	55,904
West Virginia	2,334,250	2,503,273	3,114,280	2,998,579
Wisconsin	1,823,970	1,969,885	2,105,260	2,079,512
Wyoming	222,970	326,446	133,410	245,058
Undistributed	149,350	208,241	167,200	245,248
	75,894,430	89,868,956	85,649,440	98,008,028

[1] Included under "Undistributed."

Limestone sold or used by producers in the United States in 1925, by States and uses

State	Number of active plants	Building[1]						Rubble		Riprap		Crushed stone			
		Rough construction		Rough architectural		Finished (sawed and cut)						Concrete and road metal		Railroad ballast	
		Short tons	Value	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama	13			(2)	(2)	(2)	(2)			48,880	$42,069	132,510	$144,763	133,180	$77,915
Arizona	2													(2)	(2)
Arkansas	5	(2)	(2)									(2)	(2)		
California	24							(2)	(2)			76,520	88,286	(2)	(2)
Colorado	19			(2)	(2)					(2)	(2)	(2)	(2)	(2)	(2)
Connecticut	2											(2)	(2)		
Florida	26									(2)	(2)	3,548,840	4,054,708	199,460	195,590
Georgia	8									(2)	(2)	81,880	84,926	(2)	(2)
Idaho	3														
Illinois	69	(2)	(2)					10,550	$18,275	405,940	405,261	5,973,880	5,363,668	634,050	439,458
Indiana	104			5,208,400	$3,137,253	6,809,060	$11,462,757	6,070	12,188	101,630	30,516	2,768,060	2,873,736	393,270	327,823
Iowa	26	(2)	(2)			(2)	(2)	2,860	4,166	49,130	56,027	597,670	674,903	(2)	(2)
Kansas	46	(2)	(2)	(2)	(2)			12,620	23,177	17,340	18,391	551,330	772,941	87,560	77,922
Kentucky	74	24,200	$30,085	42,080	41,426	86,630	185,220	(2)	(2)	50,360	57,052	993,240	1,213,246	528,800	380,333
Louisiana	1											(2)	(2)	(2)	(2)
Maine	4											(2)	(2)		
Maryland	20	22,580	26,119									328,600	467,760	3,470	3,303
Massachusetts	8	(2)	(2)									(2)	(2)		
Michigan	21	7,030	3,410					(2)	(2)	(2)	(2)	2,085,950	1,283,701	473,990	341,550
Minnesota	17	3,320	4,156	262,200	337,847	93,130	326,728	8,130	12,040	54,390	33,429	337,560	450,570		
Mississippi	2														
Missouri	116	26,610	19,920					261,530	405,948	207,880	262,592	1,971,350	3,003,754	114,530	80,516
Montana	6									(2)	(2)	15,580	17,074		
Nebraska	7									7,320	8,483	90,520	96,466		
Nevada	2											(2)	(2)	(2)	(2)
New Jersey	8											11,610	17,093		
New Mexico	2											(2)	(2)	(2)	(2)
New York	78	80,630	78,498			(2)	(2)			94,020	105,008	6,302,020	7,656,558	943,940	806,512
North Carolina	5	(2)	(2)									122,690	180,283		
Ohio	121	19,640	32,707					(2)	(2)	24,740	24,740	5,887,610	4,980,349	1,721,130	1,449,415
Oklahoma	18	(2)	(2)							(2)	(2)	917,960	1,056,851	441,740	341,651
Oregon	2														
Pennsylvania	262	22,440	32,206	(2)	(2)			(2)	(2)			3,954,560	5,213,328	85,410	98,322
Porto Rico	9											66,430	87,790	(2)	(2)
Rhode Island	1														
South Dakota	9									(2)	(2)	60,820	78,938		
Tennessee	29	(2)	(2)			(2)	(2)			(2)	(2)	743,900	795,862	799,520	666,634

Texas	23			(2)	(2)	(2)	(2)			99,420	99,366	1,071,390	871,326	1,227,280	776,078
Utah	16			(2)	(2)					(2)	(2)	(2)	(2)	(2)	(2)
Vermont	6							(2)	(2)			(2)	(2)		
Virginia	72	(2)	(2)							(2)	(2)	853,000	1,076,305	929,120	830,244
Washington	6									(2)	(2)				
West Virginia	30	(2)	(2)									446,910	565,380	(2)	(2)
Wisconsin	91	10,600	19,926					8,890	22,136	135,600	138,995	1,627,810	1,519,158	166,930	128,866
Wyoming	9	(2)	(2)							(2)	(2)			(2)	(2)
Undistributed		53,920	88,815	216,150	144,750	79,250	120,256	13,980	15,457	550,680	124,785	180,270	276,668	653,990	457,587
	1,422	270,970	335,842	5,728,830	3,661,276	7,068,070	12,094,961	324,630	513,387	1,847,330	1,406,714	41,800,470	44,966,391	9,537,370	7,479,719

[1] Figures for building stone include small amounts for monumental work.

[2] Included under "Undistributed."

Limestone sold or used by producers in the United States in 1925, by States and uses—Continued

State	Fluxing stone		Sugar factories		Glass factories		Paper mills		Agriculture		Other uses		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons (approximate)	Value
Alabama	889,840	$826,685							(2)	(2)	(2)	(2)	1,224,710	$1,250,742
Arizona	(2)	(2)											(2)	(2)
Arkansas									(2)	(2)	(2)	(2)	50,710	51,829
California	55,080	110,827	(2)	(2)	(2)	(2)	(2)	(2)	11,530	$37,584	78,070	$208,759	264,690	545,749
Colorado	355,060	321,353	98,260	$168,097							510	6,959	529,810	575,562
Connecticut	(2)	(2)							(2)	(2)	(2)	(2)	(2)	(2)
Florida											(2)	(2)	3,795,420	4,348,234
Georgia	(2)	(2)							24,150	35,050	61,000	246,021	189,770	385,152
Idaho			(2)	(2)					(2)	(2)	(2)	(2)	9,270	31,053
Illinois	710,130	631,159			(2)	(2)			638,490	589,797	113,850	189,426	8,518,410	7,686,005
Indiana	112,520	33,428	(2)	(2)	(2)	(2)	(2)	(2)	127,220	125,685	17,130	65,193	4,455,310	18,140,974
Iowa	12,520	16,335	(2)	(2)					93,010	71,722	(2)	(2)	805,140	870,230
Kansas									2,120	3,991	28,720	50,057	705,780	958,779
Kentucky	(2)	(2)							39,420	48,972	3,860	20,977	1,658,240	1,983,941
Louisiana													(2)	(2)
Maine	(2)	(2)					(2)	(2)	(2)	(2)	(2)	(2)	39,530	95,735
Maryland	(2)	(2)							(2)	(2)	16,510	66,559	389,910	582,663
Massachusetts	(2)	(2)							36,980	210,314	(2)	(2)	164,340	347,177
Michigan	6,054,270	3,019,919	(2)	(2)	(2)	(2)	(2)	(2)	223,480	183,806	2,428,750	1,347,619	11,460,000	6,327,634
Minnesota									20,220	18,073	7,200	35,765	458,920	1,218,608
Mississippi									(2)	(2)			(2)	(2)
Missouri	(2)	(2)	(2)	(2)	(2)	(2)			40,090	54,668	42,070	169,445	2,720,080	4,082,920
Montana	165,250	103,373	(2)	(2)					(2)	(2)			210,760	160,207
Nebraska	(2)	(2)	(2)	(2)					(2)	(2)	(2)	(2)	135,910	225,669
Nevada	(2)	(2)	(2)	(2)	(2)	(2)					(2)	(2)	(2)	(2)
New Jersey	174,420	153,321							(2)	(2)	(2)	(2)	237,100	338,037
New Mexico													(2)	(2)
New York	91,360	80,313					(2)	(2)	71,650	218,177	885,460	1,123,269	8,488,910	10,149,440
North Carolina	(2)	(2)							(2)	(2)	(2)	(2)	148,530	238,310
Ohio	2,917,380	2,048,459			76,860	$83,273	(2)	(2)	230,270	280,747	597,200	695,838	11,493,960	9,617,437
Oklahoma					(2)	(2)							1,372,040	1,414,241
Oregon							(2)	(2)	(2)	(2)			(2)	(2)
Pennsylvania	8,465,170	7,294,409			55,140	92,729	29,840	$38,234	102,710	399,053	317,990	459,490	13,033,880	13,630,050
Porto Rico									(2)	(2)			73,460	113,515
Rhode Island	(2)	(2)											(2)	(2)
South Dakota			(2)	(2)							(2)	(2)	73,080	97,880
Tennessee	25,290	28,573							79,230	135,529	66,980	223,905	1,722,310	1,856,328

Texas	[1]	[1]			[1]	[1]			[1]	[1]	[1]	[1]	2,495,440	1,898,185
Utah	207,140	170,693	49,920	103,546							[1]	[1]	877,240	441,529
Vermont	[1]	[1]							[1]	[1]	[1]	[1]	30,050	108,755
Virginia	146,560	152,729			[1]	[1]			44,860	76,686	247,540	422,516	2,252,300	2,611,157
Washington	23,490	19,956	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	44,280	55,904
West Virginia	2,208,220	2,071,698			[1]	[1]			12,100	30,445	87,150	84,102	3,114,280	2,998,579
Wisconsin	53,330	53,397							55,900	85,038	46,200	111,996	2,105,260	2,079,512
Wyoming	[1]	[1]	124,160	235,509									133,410	245,058
Undistributed	173,470	181,739	199,240	289,822	192,160	236,830	79,890	160,457	101,050	275,252	188,450	414,390	167,200	245,248
	22,840,500	17,318,366	471,580	796,974	324,160	412,832	109,730	198,691	1,954,480	2,880,589	5,234,640	5,942,286	85,649,440	98,008,028

[1] Included under "Undistributed."

Limestone sold or used by producers in the United States for miscellaneous uses, 1924 and 1925

Use	1924		1925	
	Short tons	Value	Short tons	Value
Alkali works	2,950,120	$2,074,509	3,549,930	$2,486,883
Asphalt filler	284,850	1,052,427	390,140	1,399,574
Calcium carbide works	312,670	153,572	308,660	203,506
Carbolic acid works	3,790	4,473		
Carbonic acid works	34,600	57,105	33,900	61,200
Coal mine dusting	3,020	13,240	15,550	65,746
Magnesia works	98,160	129,390	98,980	131,440
Mineral food	[1]	[1]	6,080	30,204
Mineral (rock) wool	7,530	14,808	12,660	14,308
Poultry grit	6,780	35,794	17,050	104,865
Refractory stone (dolomite)	309,010	287,137	415,710	375,315
Roofing gravel	12,210	47,068	11,950	18,570
Stucco [2]	47,610	292,453	[2] 53,440	[2] 244,427
Whiting substitute	66,910	417,326	82,290	511,406
Other uses [3]	150,420	221,159	226,570	196,255
	4,287,680	4,800,461	5,222,910	5,843,699

[1] Included under "Other uses."
[2] Includes also stone for terrazzo in 1925.
[3] Includes stone for ammonia, artificial stone, baking powder, filter stone, lime burners, mineral food, nitrates, phosphates, purification of copper, reduction of aluminum ore, road base, soap, sulphuric acid, terrazzo, and uses not specified.

A considerable quantity of the limestone reported in the tables by uses is burned into lime—particularly the limestone reported by iron and steel producers and by alkali, sugar, and paper manufacturers as quarried by them and used in their own plants; also limestone sold to manufacturers of these and other commodities, who may burn it into lime before using it. To avoid duplication, this lime is not included in the figures of production in the chapter on lime. Limestone manufactured into lime and into cement and reported in terms of finished product is treated in separate chapters. The quantities so used are estimated in the following table:

Limestone used for all purposes in the United States, 1922–1925, in short tons

Use	1922	1923	1924	1925
Limestone (as given in this report)	58,928,660	76,701,360	75,894,430	85,649,440
Portland cement (including "cement rock")	30,070,000	34,722,000	37,727,000	40,720,000
Natural cement ("cement rock")	148,000	212,000	236,000	292,000
Lime	7,280,000	8,140,000	8,144,000	9,100,000
	96,426,660	119,775,360	122,001,430	135,761,440

BUILDING STONE

More than one-half of the total quantity of building stone reported in 1925 was limestone, which increased 11 per cent over 1924. The largest quarry center for building limestone, the Bedford-Bloomington district in Indiana, showed an increase of 7 per cent over 1924. There was also an increase in the sales of high-grade building limestone quarried at Russellville, Ala., Bowling Green, Ky., and in the total sales at Kasota, Mankato, Mantorville, and Winona, Minn., and at Leuders, Tex. The sales of building limestone from the quarries and mills of the Bedford-Bloomington district in Indiana and

from quarries at Mankato and Kasota, Minn., as well as the sales of limestone and marble from the Carthage district, Missouri, are given in the tables that follow. The Carthage stone is used, as is the Indiana stone, mainly for exterior building, and the figures are given here for convenience in comparison.

Indiana.—The quantity of building stone reported as sold by producers in the Bedford-Bloomington oolitic limestone district, in Lawrence and Monroe Counties, Ind., in 1925 was 1 per cent more than in 1923, the former year of record production. Besides the architectural stone sold the waste stone is sold for flux, road metal, riprap, rubble, manufacture of paper and glass, and is manufactured into lime.

Limestone sold by producers in the Bedford-Bloomington district, Lawrence and Monroe Counties, Ind., 1916–1925

Year	Construction		Other		Total	
	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1916	8, 545, 534	$3, 393, 576	212, 236	$86, 949	832, 000	$3, 480, 525
1917	6, 774, 674	3, 261, 107	210, 326	123, 003	702, 000	3, 384, 110
1918	2, 701, 745	1, 820, 167	221, 078	140, 987	417, 000	1, 961, 154
1919	4, 788, 639	3, 787, 151	174, 463	159, 181	522, 000	3, 946, 332
1920	6, 343, 536	7, 286, 679	278, 235	293, 200	738, 000	7, 579, 879
1921	5, 297, 458	6, 815, 859	141, 068	146, 425	525, 000	6, 962, 284
1922	9, 616, 670	11, 288, 823	214, 722	139, 233	912, 000	11, 428, 056
1923	11, 694, 380	15, 248, 164	233, 180	167, 845	1, 081, 080	15, 416, 009
1924	11, 005, 570	14, 164, 241	255, 930	200, 512	1, 053, 730	14, 364, 753
1925	11, 803, 890	14, 203, 120	290, 990	170, 772	1, 146, 790	14, 373, 892

Limestone sold by producers in the Bedford-Bloomington district, Lawrence and Monroe Counties, Ind., 1924 and 1925, by counties and classes

County	Number of active plants	Construction					
		Rough blocks		Sawed		Semifinished	
		Cubic feet	Value	Cubic feet	Value	Cubic feet	Value
Lawrence	10	2, 886, 780	$1, 965, 344	1, 531, 780	$1, 582, 560	33, 530	$67, 064
Monroe	26	2, 282, 000	1, 144, 402	2, 899, 880	2, 946, 712	200, 960	380, 789
Total, 1924	36	5, 168, 780	3, 109, 746	4, 431, 660	4, 529, 272	234, 490	447, 853
	36	4, 594, 970	2, 864, 217	3, 929, 760	3, 982, 847	244, 740	553, 039

County	Construction				Other		Total	
	Cut		Total					
	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
Lawrence	1, 619, 450	$5, 056, 429	6, 071, 540	$8, 671, 397	262, 420	$162, 903	702, 620	$8, 834, 300
Monroe	349, 510	1, 059, 820	5, 732, 350	5, 531, 723	28, 570	7, 869	444, 170	5, 539, 592
Total, 1924	1, 968, 960	6, 116, 249	11, 803, 890	14, 203, 120	290, 990	170, 772	1, 146, 790	14, 373, 892
	2, 236, 100	6, 764, 138	11, 005, 570	14, 164, 241	255, 930	200, 512	1, 053, 730	14, 364, 753

A considerable amount of stone is sold by the quarry operators to the finishing mills of the district. The dressed stone sold by these mills is shown in the following tables:

Indiana oolitic limestone sold by mills not operated by quarry companies in the Bedford-Bloomington district, Lawrence and Monroe Counties, Ind., 1917–1925 [1]

Year	Cubic feet	Value	Year	Cubic feet	Value
1917	1,471,101	$1,788,405	1922	1,508,100	$3,706,900
1918	624,736	647,851	1923	1,676,500	4,805,537
1919	686,712	1,156,168	1924	1,754,500	4,654,145
1920	836,298	2,112,384	1925	2,087,860	5,629,269
1921	1,030,177	2,691,931			

[1] Includes some stone purchased by quarry operators and milled and resold.

Indiana oolitic limestone sold by mills not operated by quarry companies in the Bedford-Bloomington district, Lawrence and Monroe Counties, Ind., 1924 and 1925, by classes [1]

Year	Sawed		Semifinished		Cut		Total	
	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value
1924	358,260	$354,945	4,660	$12,144	1,391,580	$4,287,056	1,754,500	$4,654,145
1925	482,380	492,587	25,930	44,885	1,579,550	5,091,797	2,087,860	5,629,269

[1] Includes some stone purchased by quarry operators and milled and resold.

Minnesota.—The following table shows the sales of limestone at Mankato and Kasota, Minn., for the last 10 years:

Limestone sold by producers at Mankato and Kasota, Minn, 1916–1925

Year	Building stone (rough and dressed)		Other		Total	
	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1916	100,610	$91,323	[1]	[1]	[1]	[1]
1917	97,002	112,469	[1]	[1]	[1]	[1]
1918	85,998	95,615	36,892	$28,745	44,000	$124,360
1919	57,959	108,250	46,131	60,007	50,760	168,257
1920	104,865	132,170	39,564	54,485	47,900	186,655
1921	111,487	271,230	32,627	41,409	41,500	312,639
1922	151,110	261,275	29,910	32,329	42,600	293,604
1923	138,890	312,911	33,980	34,867	44,900	347,778
1924	130,660	495,036	46,610	43,152	65,560	538,188
1925	320,050	586,451	66,060	60,179	91,380	646,630

[1] Figures not available.

Stone for architectural building purposes is also quarried at Mantorville and Winona, Minn.

Missouri.—The stone from the Carthage district, Missouri, used for architectural building and for monumental work is classed as marble and is included in the figures of production of marble in Missouri given on page 237. The crushed stone and low-grade material are included under limestone, but all grades are combined to show the total production in the table below.

Limestone and marble sold by producers in the Carthage district, Jasper County, Mo., 1916–1925

Year	Building stone (rough and dressed)		Monumental stone (rough and dressed)		Other		Total	
	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1916	426,408	$497,357	25,232	$22,054	[1] 30,000	$24,388	[1] 68,000	$543,799
1917	313,904	302,411	49,819	58,809	[1] 36,000	31,223	[1] 70,600	392,443
1918	236,885	239,418	26,387	31,798	[1] 48,000	68,682	[1] 70,820	339,898
1919	231,573	399,381	62,482	77,117	44,817	84,025	69,500	560,523
1920	295,341	589,213	86,791	158,440	56,292	190,529	129,700	938,182
1921	279,560	587,301	31,551	77,421	46,751	152,521	72,600	817,243
1922	368,400	692,693	26,330	40,471	68,550	176,852	102,300	910,016
1923	442,680	782,796	20,630	32,243	66,070	167,357	104,760	982,396
1924	435,810	826,294	25,660	40,505	78,030	193,944	116,560	1,060,743
1925	478,210	1,012,930	38,810	85,321	224,270	304,913	267,450	1,403,164

[1] Estimated.

SANDSTONE

There was an increase of 15 per cent in the quantity of sandstone sold or used by producers in 1925. Sandstone for curbing, crushed stone, rubble, refractory stone (ganister), and miscellaneous uses increased in quantity, and that for building, paving blocks, and riprap decreased.

Sandstone sold or used by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building stone, cubic feet	3,550,530	$2,730,451	3,474,160	$2,813,094
Approximate equivalent in short tons	263,580		259,600	
Paving blocks, number	3,438,470	294,281	2,390,290	191,413
Approximate equivalent in short tons	32,650		21,970	
Curbing, cubic feet	2,374,010	1,877,420	3,201,320	2,375,029
Approximate equivalent in short tons	176,960		237,400	
Flagging, cubic feet	810,440	560,156	762,280	562,344
Approximate equivalent in short tons	59,840		55,790	
Crushed stone, short tons	1,989,240	2,696,791	2,250,910	2,772,823
Riprap, do	278,210	364,036	232,420	216,867
Rubble, do	221,320	276,411	406,110	574,243
Refractory stone (ganister), do	756,630	981,906	807,380	1,018,394
Other uses, do	116,260	360,647	207,750	395,809
Total (quantities approximate, in short tons)	3,894,690	10,142,099	4,479,330	10,920,016

Sandstone sold or used by producers in the United States, 1924 and 1925, by States

[Quantities approximate]

State	1924		1925	
	Short tons	Value	Short tons	Value
Alabama	50,210	$123,180	131,870	$289,692
Arizona			(1)	(1)
Arkansas	(1)	(1)	(1)	(1)
California	622,180	765,364	782,730	939,246
Colorado	89,050	84,984	29,220	63,268
Connecticut	15,020	27,156	12,690	40,327
Idaho	37,760	150,484	57,610	116,200
Illinois	63,740	43,051	58,420	36,678
Indiana	(1)	(1)	(1)	(1)
Kansas	(1)	(1)	(1)	(1)
Kentucky	20,090	156,661	44,770	143,563
Massachusetts	(1)	(1)	(1)	(1)
Michigan	17,670	33,736	28,280	20,179
Minnesota	53,830	131,351	68,780	154,901
Montana	(1)	(1)	5,350	14,394
New Jersey	11,190	18,441	34,030	50,168
New Mexico			(1)	(1)
New York	[2] 303,000	[2] 1,529,590	[2] 211,170	[2] 1,348,455
Ohio	414,150	2,746,464	516,550	3,467,135
Oklahoma	2,750	5,580	2,020	5,190
Oregon	81,900	106,752	(1)	(1)
Pennsylvania	[2] 1,322,260	[2] 2,305,743	[2] 1,351,140	[2] 2,235,726
South Dakota	121,500	181,400	134,810	196,607
Tennessee	(1)	(1)	(1)	(1)
Texas	(1)	(1)	(1)	(1)
Utah	(1)	(1)	(1)	(1)
Vermont	(1)	(1)	(1)	(1)
Virginia	(1)	(1)	124,340	169,157
Washington	21,070	563,075	29,690	447,056
West Virginia	284,040	536,881	233,920	350,564
Wisconsin	193,910	370,702	190,340	381,905
Wyoming	(1)	(1)	(1)	(1)
Undistributed	169,370	261,504	431,600	449,605
	3,894,690	10,142,099	4,479,330	10,920,016

[1] Included under "Undistributed."

[2] Includes bluestone.

Sandstone sold or used by producers in the United States in 1925, by States and uses

State	Number of active plants	Building						Refractory stone (ganister)		Paving blocks		Curbing	
		Rough construction		Rough architectural		Dressed (sawed and cut)							
		Short tons	Value	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Number	Value	Cubic feet	Value
Alabama	5							(1)	(1)				
Arizona	2							(1)	(1)				
Arkansas	2												
California	10							(1)	(1)				
Colorado	13	(1)	(1)	50,200	$19,118	(1)	(1)	17,280	$22,609				
Connecticut	5	3,580	$4,842	(1)	(1)	(1)	(1)						
Idaho	6					(1)	(1)						
Illinois	3	(1)	(1)					(1)	(1)				
Indiana	1												
Kansas	2												
Kentucky	7	(1)	(1)	(1)	(1)	106,060	$112,301						
Massachusetts	2			(1)	(1)	(1)	(1)						
Michigan	3	(1)	(1)	(1)	(1)								
Minnesota	5	(1)	(1)	(1)	(1)	(1)	(1)			(1)	(1)		
Montana	3					(1)	(1)	(1)	(1)				
New Jersey	3	(1)	(1)	(1)	(1)								
New Mexico	2	(1)	(1)										
New York	38	2,260	2,231	71,880	48,695	292,680	375,156			703,490	$49,577	884,610	$672,954
Ohio	17	5,010	15,394	550,150	241,334	940,870	1,037,675	(1)	(1)			2,086,450	1,514,817
Oklahoma	3	2,020	5,190										
Oregon	1												
Pennsylvania	95	11,480	17,309	40,000	35,233	23,740	116,669	579,950	669,336	1,486,320	116,636	230,260	187,258
South Dakota	10	(1)	(1)	(1)	(1)			(1)	(1)	(1)	(1)		
Tennessee	1												
Texas	1												
Utah	1												
Vermont	1	(1)	(1)										
Virginia	7			(1)	(1)								
Washington	3					(1)	(1)						
West Virginia	32	(1)	(1)					(1)	(1)				
Wisconsin	18	3,160	4,077	19,980	22,001	9,760	24,931	143,210	178,277	(1)	(1)		
Wyoming	1												
Undistributed		53,590	65,012	176,150	140,210	140,090	525,716	66,940	118,172	200,480	25,200		
	303	81,100	114,055	908,360	506,591	1,513,200	2,192,448	807,380	1,018,394	2,390,290	191,413	3,201,320	2,375,029

[1] Included under "Undistributed."

Sandstone sold or used by producers in the United States in 1925, by States and uses—Continued

State	Flagging		Rubble		Riprap		Crushed stone				Other uses		Total	
							Concrete and road metal		Railroad ballast					
	Cubic feet	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons (approximate)	Value
Alabama			(1)	(1)	(1)	(1)							131,870	$289,692
Arizona									(1)	(1)			(1)	(1)
Arkansas					(1)	(1)	(1)	(1)					(1)	(1)
California			(1)	(1)			727,500	$889,016	(1)	(1)	(1)	(1)	782,730	939,246
Colorado	(1)	(1)	3,850	$5,762	(1)	(1)	(1)	(1)					29,220	63,268
Connecticut			(1)	(1)			(1)	(1)					12,690	40,327
Idaho			(1)	(1)			54,800	54,800					57,610	116,200
Illinois							(1)	(1)					58,420	36,678
Indiana					(1)	(1)							(1)	(1)
Kansas			(1)	(1)			(1)	(1)					(1)	(1)
Kentucky	(1)	(1)			(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	44,770	143,563
Massachusetts			(1)	(1)									(1)	(1)
Michigan					(1)	(1)	(1)	(1)			(1)	(1)	28,280	20,179
Minnesota					(1)	(1)	54,480	80,695			(1)	(1)	68,780	154,901
Montana													5,350	14,394
New Jersey					(1)	(1)							34,030	50,168
New Mexico									(1)	(1)			(1)	(1)
New York	102,750	$77,703	10,320	4,490	8,890	$6,849	72,470	110,800					211,170	1,348,455
Ohio	589,440	411,544	2,000	2,543	154,630	151,713	33,660	48,583	(1)	(1)	(1)	(1)	516,550	3,467,135
Oklahoma													2,020	5,190
Oregon			(1)	(1)									(1)	(1)
Pennsylvania	51,110	59,703	18,800	44,840	15,390	3,056	501,560	690,804	152,780	$189,576	29,430	$75,306	1,351,140	2,235,726
South Dakota			(1)	(1)	3,220	2,695	113,456	153,617			(1)	(1)	134,810	196,607
Tennessee			(1)	(1)									(1)	(1)
Texas					(1)	(1)	(1)	(1)					(1)	(1)
Utah			(1)	(1)									(1)	(1)
Vermont			(1)	(1)	(1)	(1)							(1)	(1)
Virginia							29,520	61,253	(1)	(1)	14,930	23,882	124,340	169,157
Washington			(1)	(1)	(1)	(1)							29,690	447,056
West Virginia							140,770	216,050			85,320	125,140	233,920	350,564
Wisconsin			8,080	7,466	5,580	4,105	(1)	(1)			(1)	(1)	190,340	381,905
Wyoming			(1)	(1)	(1)	(1)							(1)	(1)
Undistributed	18,980	13,394	363,060	509,142	44,710	48,449	107,700	108,424	262,220	169,205	78,070	171,481	431,600	449,605
	762,280	562,344	406,110	574,243	232,420	216,867	1,835,910	2,414,042	415,000	358,781	207,750	395,809	4,479,330	10,920,016

[1] Included under "Undistributed."

BLUESTONE

The figures for bluestone are included in those for sandstone, but on account of the local importance of this stone they are also given separately. Except for a few of the large quarries, the Bureau of Mines uses the figures of sales reported by dealers, rather than those of the quarrymen, as more nearly representative of this industry. Stone for building and curbing increased in quantity and that for flagging, the other important product, decreased.

Bluestone sold in New York and Pennsylvania, 1924 and 1925

State	Building stone		Curbing		Flagging		Other		Total	
	Cubic feet	Value	Cubic feet	Value	Cubic feet	Value	Short tons	Value	Short tons (approximate)	Value
1924										
New York	121,870	$268,226	370,520	$363,649	112,110	$81,778	17,100	$17,130	68,160	$730,783
Pennsylvania	16,480	14,115	100,980	101,701	47,280	46,265	2,400	4,440	16,310	166,521
	138,350	282,341	471,500	465,350	159,390	128,043	19,500	21,570	84,470	897,304
1925										
New York	171,800	263,872	531,790	378,031	98,870	76,203	20,550	22,999	86,770	741,105
Pennsylvania	9,420	6,090	125,960	129,736	49,460	56,653	14,500	3,476	30,120	195,955
	181,220	269,962	657,750	507,767	148,330	132,856	35,050	26,475	116,890	937,060

MISCELLANEOUS STONE

Virtually all the material included under "miscellaneous" stone is used for road metal, concrete, and railroad ballast. Miscellaneous stone sold or used by producers in 1925 increased 21 per cent in quantity over 1924. The increase in crushed stone was 29 per cent. Much crushed stone is quarried for jobs near quarries, and the quarries are closed when the work is completed.

The State contributing the largest amount of miscellaneous stone is California. The output of this State includes rhyolite tuff (used as a building stone), andesite, rhyolite, trachyte, and other light-colored volcanic rocks, decomposed granite, hornblende-mica schist, and stone crushed from bowlders taken from river beds. The crushed bowlders are mostly from Los Angeles County, where part of the material taken out is sand, part screened gravel, and the rest chiefly bowlders which are crushed. The sand and screened gravel obtained are included in the report on sand and gravel. Among the varieties of stone reported are argillite quarried in Arkansas, New Jersey, and Pennsylvania; phonolite from mine dumps in Colorado; cherty limestone or flint rock in Florida; rhyolite in Missouri; slate, conglomerate, and light-colored volcanic rocks in Massachusetts; and mica schist for building and refractory stone in Pennsylvania. There are also included from the other States volcanic cinders, coral rock, rhyolite, andesite, decomposed granite, mica crystal grit, "gyp" rock, "caliche," serpentine, field stone, and some stone of unknown kinds reported by local contractors or operators of portable crushers at temporary quarry sites.

Miscellaneous varieties of stone[1] sold or used by producers in the United States, 1924 and 1925, by uses

Use	1924		1925	
	Quantity	Value	Quantity	Value
Building stone—cubic feet	299,480	$99,385	324,650	$64,963
Approximate equivalent in short tons	22,940		24,850	
Riprap and rubble—short tons	501,520	789,911	327,950	740,284
Crushed stone—do	3,761,820	4,049,993	4,839,410	5,083,347
Refractory stone (mica schist)—do	28,300	120,370	38,040	154,481
Other uses—do	9,060	45,480	11,890	61,827
Total (quantities approximate, in short tons)	4,323,640	5,105,139	5,242,140	6,104,902

[1] Includes mica schist, conglomerate, argillite, various light-colored volcanic rocks, serpentine not used as marble, and such other stone as can not be properly classed in any of the main groups.

Miscellaneous varieties of stone sold or used by producers in the United States, 1924 and 1925, by States

[Quantities approximate]

State	1924		1925	
	Short tons	Value	Short tons	Value
Arizona	43,230	$80,761	(1)	(1)
Arkansas	378,110	451,691	(1)	(1)
California	2,730,780	2,967,258	3,707,120	$3,593,847
Colorado	(1)	(1)	52,110	29,670
Connecticut			(1)	(1)
Florida	81,750	225,292	231,370	338,873
Hawaii	(1)	(1)		
Idaho	16,550	18,975	(1)	(1)
Maine	(1)	(1)	(1)	(1)
Massachusetts	270,810	460,395	338,450	655,069
Missouri			(1)	(1)
Montana			(1)	(1)
Nevada	137,080	62,275	35,370	38,199
New Hampshire	(1)	(1)	(1)	(1)
New Jersey	(1)	(1)	(1)	(1)
New Mexico	(1)	(1)		
New York	22,600	49,625	(1)	(1)
North Carolina	(1)	(1)	216,520	376,055
Ohio			(1)	(1)
Oklahoma	(1)	(1)		
Oregon	47,140	42,958	38,840	55,279
Pennsylvania	128,430	315,610	122,710	308,713
Rhode Island	32,630	74,095	58,950	140,468
South Dakota	(1)	(1)	2,510	3,888
Utah			(1)	(1)
Washington	12,770	7,475		
Wisconsin			(1)	(1)
Wyoming	(1)	(1)		
Undistributed	421,760	348,729	438,190	564,841
	4,323,640	5,105,139	5,242,140	6,104,902

[1] Included under "Undistributed."

Miscellaneous varieties of stone sold or used by producers in the United States in 1925, by States and uses

State	Number of active plants	Building		Riprap and rubble		Crushed stone				Other uses		Total	
		Short tons	Value	Short tons	Value	Concrete and road metal		Railroad ballast		Short tons	Value	Short tons (approximate)	Value
						Short tons	Value	Short tons	Value				
Arizona	2	(1)	(1)			(1)	(1)					(1)	(1)
Arkansas	2			(1)	(1)	(1)	(1)	(1)	(1)			(1)	(1)
California	70	950	$9,926	308,400	$720,885	3,394,200	$2,845,949	2,050	$2,087	1,520	$15,000	3,707,120	$3,593,847
Colorado	3					52,110	29,670					52,110	29,670
Connecticut	1			(1)	(1)	(1)	(1)					(1)	(1)
Florida	7					231,370	338,873					231,370	338,873
Idaho	1	(1)	(1)									(1)	(1)
Maine	2					(1)	(1)					(1)	(1)
Massachusetts	10	1,200	1,826			337,250	653,243					338,450	655,069
Missouri	1					(1)	(1)					(1)	(1)
Montana	1			(1)	(1)							(1)	(1)
Nevada	3					(1)	(1)			(1)	(1)	35,370	38,199
New Hampshire	2					(1)	(1)			(1)	(1)	(1)	(1)
New Jersey	1	(1)	(1)			(1)	(1)					(1)	(1)
New York	1					(1)	(1)					(1)	(1)
North Carolina	3	(1)	(1)			(1)	(1)					216,520	376,055
Ohio	1									(1)	(1)	(1)	(1)
Oregon	4					31,440	52,054	7,400	3,225			38,840	55,279
Pennsylvania	17	16,970	40,636			61,060	102,468	4,470	6,443	40,210	159,166	122,710	308,713
Rhode Island	4			(1)	(1)	58,020	139,049	(1)	(1)	(1)	(1)	58,950	140,468
South Dakota	5					2,510	3,888					2,510	3,888
Utah	1									(1)	(1)	(1)	(1)
Wisconsin	1					(1)	(1)					(1)	(1)
Undistributed		5,730	12,575	19,550	19,399	584,220	814,761	73,310	91,637	8,200	42,142	438,190	564,841
	143	24,850	64,963	327,950	740,284	4,752,180	4,979,955	87,230	103,392	49,930	216,308	5,242,140	6,104,902

[1] Included under "Undistributed."

CRUSHED STONE (CONCRETE AND ROAD METAL AND RAILROAD BALLAST)

The quantity of crushed stone sold or used by producers for concrete and road metal and for railroad ballast in the United States increased 11 per cent in 1925 as compared with 1924. The value increased 9 per cent. Stone for concrete and road metal increased 9 per cent in quantity and 7 per cent in value. Stone for railroad ballast increased 22 per cent in quantity and 20 per cent in value. There was a decrease of 2 cents in the average value of stone for concrete and road metal and a decrease of 1 cent in that for railroad ballast. In 1925, as in 1923 and 1924, a canvass was made of railroad companies in order to obtain more complete reports of the noncommercial material quarried and used by them. A similar canvass was made of the highway departments of all the States to ascertain the amount of noncommercial material used by them. Except those from a few States the reports are not entirely satisfactory; records are not kept by all States in such a way as to give this information. There are also great variations in the output reported by States and municipalities, because much of the State and municipal work depends on appropriations that vary greatly from year to year.

Crushed stone sold or used by producers in the United States, 1924 and 1925

Kind	Concrete and road metal		Railroad ballast		Total		
	Short tons	Value	Short tons	Value	Short tons	Value	
						Total	Average
1924							
Granite	3,763,750	$5,031,814	1,042,820	$903,777	4,806,570	$5,935,591	$1.23
Basalt and related rocks (trap rock)	9,803,500	12,146,268	1,390,630	1,438,496	11,194,130	13,584,764	1.21
Limestone	39,213,110	41,911,051	7,233,570	5,683,386	46,446,680	47,594,437	1.02
Sandstone	1,720,680	2,428,659	268,560	268,132	1,989,240	2,696,791	1.36
Miscellaneous	3,183,170	3,610,900	578,650	439,093	3,761,820	4,049,993	1.08
	57,684,210	65,128,692	10,514,230	8,732,884	68,198,440	73,861,576	------
Average value per ton	----------	1.13	----------	0.83	----------	1.08	------
1925							
Granite	4,659,780	5,685,878	1,165,770	825,022	5,825,550	6,510,900	1.12
Basalt and related rocks (trap rock)	9,775,460	11,940,463	1,643,760	1,754,786	11,419,220	13,695,249	1.20
Limestone	41,800,470	44,966,391	9,537,370	7,479,719	51,337,840	52,446,110	1.02
Sandstone	1,835,910	2,414,042	415,000	358,781	2,250,910	2,772,823	1.23
Miscellaneous	4,752,180	4,979,955	87,230	103,392	4,839,410	5,083,347	1.05
	62,823,800	69,986,729	12,849,130	10,521,700	75,672,930	80,508,429	------
Average value per ton	----------	1.11	----------	0.82	----------	1.06	------

CEMENT

By B. W. Bagley

GENERAL REVIEW

Early in January, 1926, the Bureau of Mines published a summary of the monthly estimates of output of Portland cement in 1925, compiled from the monthly reports of producers. These preliminary figures, which showed a production of about 161,202,000 barrels and shipments of about 156,724,000 barrels, were within about 0.3 and 0.4 per cent, respectively, of the final figures for 1925.

At the beginning of 1925 the production of Portland cement was slightly larger and shipments were slightly less than at the beginning of 1924. As demand increased during the spring and summer, production and shipments attained much higher monthly levels during most of the year than in 1924 and reached their maximum in August, when they were the highest for any month in the history of the industry. The production in August—16,419,000 barrels—exceeded that of the entire country for the year 1901 by more than 29 per cent.

At the end of September, when stocks were lowest, there was about 10,247,000 barrels of finished cement at the mills. The monthly average for such stocks for the year was more than 16,000,000 barrels, as compared with about 13,200,000 barrels in 1924.

Engineering and building construction was responsible for the unprecedented demand for cement in 1925. The general trend of building construction during the years 1922 to 1925 is shown by the following table, which summarizes the value of buildings, as shown by permits issued during those years, in 180 cities representing all parts of the United States. The grand totals for the four years increased successively, and in 1925 and throughout the four years all districts showed gains except the central and northern Great Plains States and California, which showed decreases in 1924.

Value of buildings shown by permits issued in 180 cities in the United States, 1922–1925[1]

Group of cities	1922	1923	1924	1925	Increase 1925 over 1924 (per cent)
New England	$152,680,000	$153,820,000	$183,099,000	$225,757,000	23
New York and northern New Jersey	773,747,000	983,772,000	1,062,275,000	1,280,286,000	21
Eastern Pennsylvania, southern New Jersey, Maryland, Delaware, District of Columbia, and Virginia	287,528,000	303,717,000	330,909,000	381,705,000	15
Western Pennsylvania, West Virginia, Ohio, and Kentucky	214,628,000	243,146,000	255,218,000	300,454,000	18
Illinois, Indiana, Iowa, Wisconsin, Michigan, Missouri, Kansas, Nebraska, and Oklahoma	556,604,000	726,319,000	711,077,000	836,811,000	18
Minnesota, North Dakota, and South Dakota	65,671,000	80,562,000	55,912,000	65,026,000	16
North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, and Louisiana	119,858,000	145,621,000	168,561,000	226,622,000	34
Arizona and Texas	55,205,000	64,974,000	73,468,000	91,050,000	24
Colorado, Utah, Montana, and Idaho	25,911,000	31,627,000	34,073,000	36,171,000	6
California, Washington, and Oregon	302,006,000	408,351,000	383,059,000	405,258,000	6
	2,553,838,000	3,141,909,000	3,257,651,000	3,849,140,000	18

[1] From Bulletin of Portland Cement Association, showing values tabulated in detail by cities, based on Bradstreet's and F.W. Dodge Corporation building statistics.

The other table summarizes the value of contracts awarded for buildings of all classes and for engineering construction of all other kinds, including public works. The net increase in 1925 for construction work of all kinds was considerably higher than that for buildings alone.

Value of contracts awarded for building and all other construction work in eastern and central States, 1922–1925 [1]

Group of States	1922	1923	1924	1925	Increase 1925 over 1924 (per cent)
New England	$333,572,000	$332,857,000	$352,195,000	$477,181,000	35
New York and northern New Jersey	891,321,000	1,068,935,000	1,326,896,000	1,601,257,000	21
Eastern Pennsylvania, southern New Jersey, Maryland, Delaware, District of Columbia, and Virginia	418,869,000	374,182,000	477,746,000	552,318,000	16
Western Pennsylvania, West Virginia, Ohio, and Kentucky	534,575,000	593,994,000	578,365,000	828,642,000	43
Illinois, Indiana, Iowa, Wisconsin, Michigan, Missouri, Kansas, Nebraska, and Oklahoma	1,048,329,000	1,006,422,000	1,049,586,000	1,487,310,000	42
Minnesota, North and South Dakota, and northern Michigan	78,564,000	127,336,000	88,264,000	95,229,000	8
North and South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas, and Louisiana	(2)	486,757,000	606,255,000	779,132,000	29
	[3]3,305,230,000	3,990,483,000	4,479,307,000	5,821,069,000	30

[1] From Bulletin of Portland Cement Association based on compilations by F. W. Dodge Corporation.
[2] No statistics available prior to 1923.
[3] Exclusive of southeastern States.

CHIEF HYDRAULIC CEMENTS

The accompanying table gives the shipments of Portland and other (masonry, natural, and puzzolan) cements in 1923 to 1925. The shipments of these cements from the mills in the United States in 1925 increased nearly 8 per cent in quantity and more than 5 per cent in value over the shipments in 1924.

Statistics of output of alumina cement, representing the operations of only one manufacturer in the United States, are not included in this or other tables of this report. No production of this type of cement in the United States was reported for 1923, but it was marketed in 1924 and to a considerable extent in 1925. The indications are that its use will increase steadily.

Hydraulic cements shipped from mills in the United States, 1923–1925

Class	1923		1924		1925	
	Barrels	Value	Barrels	Value	Barrels	Value
Portland	135,912,118	$257,684,424	146,047,549	$264,046,708	157,295,212	$278,524,108
Masonry, natural, and puzzolan	1,271,674	1,947,352	1,418,461	2,006,559	1,751,725	2,551,583
	137,183,792	259,631,776	147,466,010	266,053,267	159,046,937	281,075,691

The following table gives the production and value of natural, Portland, and puzzolan cements from 1916 to 1925.

Principal hydraulic cements produced in the United States, 1916–1925[1]

Year	Masonry, natural, and puzzolan cements		Portland cement		Total	
	Barrels	Value[2]	Barrels	Value[2]	Barrels	Value[2]
1916	842,137	$430,874	91,521,198	$100,947,881	92,363,335	$101,378,755
1917	639,456	435,370	92,814,202	125,670,430	93,453,658	126,105,800
1918	432,966	401,341	71,081,663	113,730,661	71,514,629	114,132,002
1919	528,589	583,554	80,777,935	138,130,269	81,306,524	138,713,823
1920	767,481	1,150,890	100,023,245	202,046,955	100,790,726	203,197,845
1921	539,402	897,025	98,842,049	186,811,473	99,381,451	187,708,498
1922	889,428	1,293,598	114,789,984	202,030,372	115,679,412	203,323,970
1923	1,271,674	1,947,352	137,460,238	261,174,452	138,731,912	263,121,804
1924	1,418,461	2,006,559	149,358,109	270,338,177	150,776,570	272,344,736
1925	1,729,343	2,524,841	161,658,901	286,136,255	163,388,244	288,661,096

[1] The figures for natural and puzzolan cements from 1916 to 1924 represent shipments. Figures for production are not available prior to 1925.

[2] The values given for the production of Portland cement for all years and for the production of masonry, natural, and puzzolan cements for 1925 have been calculated at the average value of shipments.

PORTLAND CEMENT

PRODUCTION, SHIPMENTS, AND STOCKS

The total output of Portland cement in the United States in 1925 showed an increase of 8 per cent over that in 1924. Shipments from the mills increased 8 per cent in quantity and more than 5 per cent in gross value. The average factory value decreased 4 cents a barrel, or more than 2 per cent. The production of 161,658,901 barrels of 376 pounds net is equivalent to 646,635,604 sacks, 27,135,601 long tons, or 30,391,873 short tons.

In the accompanying table the statistics are arranged by States, so far as possible. The term "active plant" is applied to a mill or to a group of mills situated at one place and operated by one company; if a company has establishments at different places, its mill or group of mills at each place is counted as a plant. In the table by districts the statistics are for groups of States, or parts of States, that are geographically and commercially related.

Of the 29 States in which Portland cement was manufactured in 1925 all but 5 showed increases in production and all but 8 showed increases in shipments as compared with 1924. All the commercial districts except eastern Missouri-Iowa-Minnesota-South Dakota and Colorado-Utah showed increases in production and all but the last-named showed increases in shipments; the gains in production ranged from 4 to 30 per cent and in shipments from 3 to 28 per cent. In 1925 production exceeded shipments by 4,363,689 barrels.

The statistical tables show large increases in production in certain States or districts. For instance, in Washington there was a gain of 35 per cent and in Ohio, where two large new mills (see p. 270) began making cement in 1925, there was a gain of 24 per cent. In Michigan, where the initial production of another new plant was recorded, there was a gain of 18 per cent. The State of New York showed a gain of 16 per cent. The production in other States, such as Georgia and Texas, was likewise increased by the building of new mills. The increase in output where no new mills were erected was, as a rule, due to larger manufacturing facilities, stimulated, no doubt, by the growth of road-building and other construction work.

Portland cement produced, shipped, and in stock in the United States, 1924–25, by States and districts

	Production					Shipments							Stock (Dec. 31)		
	Active plants		Barrels		Increase or decrease, 1925 (per cent)	1924		1925		Average factory value per barrel		Increase or decrease in quantity, 1925 (per cent)	Barrels		Increase or decrease, 1925 (per cent)
	1924	1925	1924	1925		Barrels	Value	Barrels	Value	1924	1925		1924 (revised)	1925	
STATE															
Alabama	5	5	5,552,550	6,288,117	+13	5,542,687	$9,147,367	6,045,967	$9,824,439	$1.65	$1.62	+9	146,229	388,379	+166
California	10	10	11,615,379	13,098,140	+13	11,481,730	25,532,707	13,109,426	26,159,531	2.22	2.00	+14	502,584	491,298	−2
Illinois	4	4	6,994,323	7,101,024	+2	6,955,455	12,026,310	6,749,532	11,481,576	1.73	1.70	−3	691,334	1,042,826	+51
Iowa	5	5	5,624,466	4,648,145	−17	4,881,613	8,811,587	4,856,849	8,674,563	1.81	1.79	−1	1,695,193	1,486,489	−12
Kansas	7	7	5,894,236	6,511,393	+10	5,809,646	9,900,547	6,513,297	10,861,506	1.70	1.67	+12	892,413	890,509	−.2
Michigan	15	16	9,259,781	10,936,181	+18	8,991,270	16,405,761	10,073,453	17,511,908	1.82	1.74	+12	1,060,047	1,922,775	+81
Missouri	5	5	7,871,621	8,331,751	+6	7,711,206	13,515,267	8,168,165	14,155,795	1.75	1.73	+6	921,165	1,084,751	+18
New York	9	9	7,571,856	8,769,584	+16	7,435,875	13,460,594	8,534,089	14,967,642	1.81	1.75	+15	792,831	1,028,326	+30
Ohio	7	9	4,600,835	5,714,635	+24	4,298,027	7,836,325	5,426,768	9,600,084	1.82	1.77	+26	656,590	944,507	+44
Pennsylvania	22	22	40,849,602	42,346,830	+4	40,208,860	69,693,517	41,899,787	72,870,981	1.73	1.74	+4	2,759,021	3,206,064	+16
Texas	5	6	4,565,983	4,858,212	+6	4,488,143	8,322,658	4,735,521	8,729,046	1.85	1.84	+6	356,212	478,903	+34
Washington	4	4	1,842,113	2,481,923	+35	1,793,403	4,236,554	2,499,237	5,523,324	2.36	2.21	+39	289,614	272,300	−6
Other States [1]	34	36	37,115,364	40,572,916	+9	36,449,634	65,157,514	38,683,121	68,163,713	1.79	1.76	+6	3,388,462	5,278,257	+56
	132	138	149,358,109	161,658,901	+8	146,047,549	264,046,708	157,295,212	278,524,108	1.81	1.77	+8	14,151,695	18,515,384	+31
COMMERCIAL DISTRICT															
Eastern Pennsylvania, New Jersey, and Maryland	22	22	38,656,739	40,279,457	+4	37,989,250	$65,500,657	40,286,898	$70,094,072	$1.72	$1.74	+6	2,541,627	2,534,186	−0.3
New York	9	9	7,571,856	8,769,584	+16	7,435,875	13,460,594	8,534,089	14,967,642	1.81	1.75	+15	792,831	1,028,326	+30
Ohio, western Pennsylvania, and West Virginia	12	14	14,331,451	15,572,602	+9	14,028,762	25,104,849	14,628,575	25,614,083	1.79	1.75	+4	1,369,916	2,313,943	+69
Michigan	15	16	9,259,781	10,936,181	+18	8,991,270	16,405,761	10,073,453	17,511,908	1.82	1.74	+12	1,060,047	1,922,775	+81
Wisconsin, [2] Illinois, Indiana, and Kentucky	11	11	21,823,469	23,521,488	+8	21,343,396	37,189,604	22,052,884	37,792,110	1.74	1.71	+3	2,041,760	3,510,364	+72

Virginia, Tennessee, Alabama, and Georgia	12	14	11,411,054	13,505,792	+18	11,374,280	19,201,389	13,018,251	21,581,494	1.69	1.65	+15	491,474	949,015	+48
Eastern Missouri, Iowa, Minnesota, and South Dakota[3]	11	11	14,822,738	14,571,751	−2	13,984,167	24,757,538	14,477,932	25,317,292	1.77	1.75	+4	2,737,240	2,831,059	+3
Western Missouri, Nebraska, Kansas, and Oklahoma	11	11	9,892,813	10,672,816	+8	9,586,084	16,262,422	10,524,247	17,772,268	1.70	1.69	+10	1,507,824	1,656,393	+10
Texas	5	6	4,565,983	4,858,212	+6	4,488,143	8,322,658	4,735,521	8,729,046	1.85	1.84	+6	356,212	478,903	+34
Colorado and Utah	5	5	2,423,830	2,005,071	−17	2,377,774	5,081,599	2,018,034	4,388,453	2.14	2.17	−15	315,990	303,027	−4
California	10	10	11,615,379	13,098,140	+13	11,481,730	25,532,707	13,109,426	26,159,531	2.22	2.00	+14	502,584	491,298	−2
Oregon, Washington, and Montana	9	9	2,983,016	3,867,807	+30	2,965,918	7,226,930	3,805,902	8,596,209	2.44	2.26	+28	434,190	496,095	+14
	182	138	149,358,199	161,658,901	+8	146,047,549	264,046,708	157,295,212	278,524,103	1.81	1.77	+8	14,151,695	18,515,384	+31

[1]Includes Colorado, Georgia, Indiana, Kentucky, Maryland, Minnesota, Montana, Nebraska, New Jersey, Oklahoma, Oregon, South Dakota, Tennessee, Utah, Virginia, West Virginia, and Wisconsin.
[2]Began producing and shipping in June, 1924.
[3]South Dakota began producing in December, 1924, and shipping in January, 1925.

The accompanying table, which shows production, shipments, and stocks by months for 1924 and 1925, has been compiled from monthly reports of producers but includes estimates of the output of one or two plants each month. Although the figures only approximate the totals shown by other tables, which are based on final annual reports from the producers, they reflect accurately the fluctuations in the industry during the year. In December, January, and February in the colder parts of the United States production of Portland cement is necessarily somewhat curtailed at plants using marl as raw material and at other plants where the wet process is employed. In addition numerous other mills close for repairs during the winter, when demand is lowest. The spreading of construction work, heretofore largely carried on during seven to eight months of the year, over a larger portion of the year will create a steadier demand for cement, but the difficulties of construction work in northern cities during winter will be hard to overcome. As the quantity of clinker, or unground cement, in reserve at the mills is of interest, the table appended shows these stocks as estimated by the manufacturers.

Estimated production, shipments, and mill stocks of Portland cement in the United States, 1924–25 by months, in barrels

Month	1924			1925		
	Production	Shipments	Stocks on last day of the month	Production	Shipments	Stocks on last day of the month
January	8,788,000	5,210,000	14,155,000	8,856,000	5,162,000	17,656,000
February	8,588,000	5,933,000	16,815,000	8,255,000	6,015,000	19,680,000
March	10,370,000	8,995,000	18,189,000	11,034,000	10,279,000	20,469,000
April	11,726,000	12,771,000	17,159,000	13,807,000	14,394,000	19,877,000
May	13,777,000	14,551,000	16,403,000	15,503,000	16,735,000	18,440,000
June	13,538,000	15,036,000	14,903,000	15,387,000	17,501,000	16,409,000
July	14,029,000	16,614,000	12,319,000	15,641,000	18,131,000	13,896,000
August	15,128,000	16,855,000	10,666,000	16,419,000	18,383,000	11,952,000
September	14,519,000	16,827,000	8,404,000	15,939,000	17,711,000	10,247,000
October	14,820,000	17,160,000	6,073,000	15,992,000	15,309,000	10,979,000
November	13,141,000	10,289,000	8,928,000	13,656,000	10,187,000	14,534,000
December	10,435,000	5,506,000	[1]14,152,000	10,713,000	6,917,000	18,515,000

[1] Revised figures.

Estimated clinker, or unground cement, at the mills in the United States at the end of each month, 1924–25, in barrels

Month	1924	1925	Month	1924	1925
January	5,458,000	7,017,000	July	6,646,000	6,961,000
February	6,905,000	8,497,000	August	5,367,000	5,640,000
March	8,271,000	9,962,000	September	4,260,000	4,561,000
April	8,545,000	9,731,000	October	3,548,000	4,086,000
May	8,225,000	9,053,000	November	4,025,000	5,013,000
June	7,609,000	7,937,000	December	5,433,000	6,469,000

Portland cement shipped from mills in the United States, 1916–1925

Year	Barrels	Value	Year	Barrels	Value
1916	94,552,296	$104,258,216	1921	95,507,147	$180,778,415
1917	90,703,474	122,775,088	1922	117,701,216	207,170,430
1918	70,915,508	113,316,275	1923	135,912,118	257,684,424
1919	85,612,899	146,734,844	1924	146,047,549	264,046,708
1920	96,311,719	194,439,025	1925	157,295,212	278,524,108

The stock of Portland cement reported on hand at the mills was high throughout the year; each month showed an increase over the corresponding month in 1924. At the end of 1925 the stock was 31 per cent larger than that at the end of 1924, was the largest at the end of any year during which official records of stocks have been kept, and exceeded the average for the five preceding years (11,068,444 barrels) by more than 67 per cent. The totals by States and districts are shown in preceding tables.

Finished Portland cement in stock at mills in the United States, December 31, 1916–1925, in barrels

1916	8, 360, 552	1921	12, 192, 567
1917	10, 353, 838	1922	9, 352, 250
1918	10, 451, 044	1923	10, 812, 639
1919	5, 256, 900	1924	[1]14, 151, 695
1920	8, 833, 067	1925	18, 515, 384

DOMESTIC CONSUMPTION

An estimate of the total consumption of Portland cement in the United States may be made by adding the imports to the shipments and subtracting the exports from the sum. Of course, at any time a variable but considerable quantity of cement is in transit, in warehouses at distributing points, and awaiting use at jobs, so that the estimate thus made is at best only approximate. Another fact that impairs the accuracy of the estimate is that the cement imported and exported is classed as hydraulic cement, hence the records do not discriminate between Portland and other cements and probably include some plaster also. Portland cement, however, constitutes by far the greater part of the exports. The apparent domestic consumption in 1925 showed an increase of 9 per cent as compared with the consumption in 1924.

Portland cement available for consumption in the United States, 1916–1925, in barrels

Year	Shipments	Imports	Exports	Available for consumption
1916	94, 552, 296	1, 833	2, 563, 976	91, 990, 156
1917	90, 703, 474	2, 323	2, 586, 215	88, 119, 582
1918	70, 915, 508	305	2, 252, 446	68, 663, 367
1919	85, 612, 899	8, 931	2, 463, 573	83, 158, 257
1920	96, 311, 719	524, 604	2, 985, 807	93, 850, 516
1921	95, 507, 147	122, 322	1, 181, 014	94, 448, 455
1922	117, 701, 216	323, 823	1, 127, 845	116, 897, 194
1923	135, 912, 118	1, 678, 636	1, 001, 688	136, 589, 066
1924	146, 047, 549	2, 010, 936	878, 543	147, 179, 942
1925	157, 295, 212	3, 655, 317	1, 019, 597	159, 930, 932

Furthermore, the estimates of consumption of Portland cement by States are merely approximate because they are based on the records of shipments by manufacturers into the several States. Such ship-

[1] Revised figures.

ments do not equal the consumption in that State during the same year, but shipments over a long period should afford a fair index of consumption. The simplest available common unit is the estimated consumption, in barrels per capita, which is obtained by comparing the shipments into the several States with the population of those States. The following table shows such figures for 1924 and 1925. The estimates of population used in calculating the per capita consumption are those of the Bureau of the Census.

The official figures for exports of cement, as given on page 276, differ from the exports reported by manufacturers, as shown in the following table, because cement forwarded from mills and destined for foreign countries and for Alaska, Hawaii, and Porto Rico is reported by the shipper as exported, whether or not it leaves the country during the calendar year; but the Bureau of Foreign and Domestic Commerce bases its export figures on its records of the cement that actually leaves the country. (Shipments to Alaska, Hawaii, and Porto Rico are given on p. 275.) The exports given by that bureau for 1925 include all other hydraulic cement exported, whereas the table of per capita consumption relates only to Portland cement.

The per capita consumption shown by the table necessarily falls short of the total apparent consumption by the quantity of the imports. These increase the consumption in certain States near the Canadian border and the seaboard; in 1925 they increased the general average per capita consumption by about 0.032 barrel.

There were 28 States in which the per capita consumption in 1925 was 1 barrel or more—13 of them west and 15 of them east of Mississippi River. Two of them, Florida and North Carolina, are Southern States.

Florida showed the highest per capita consumption for the year, a noteworthy result of the great amount of construction work in progress in that State. In 1921 the per capita consumption of Florida was 0.66 barrel, higher than in any preceding year for which official statistics of per capita consumption were published. Each year following showed an increase until in 1925 the consumption was 3.28 barrels, and Florida displaced California which held the record for the four preceding years. In 1925 California followed Florida closely with a per capita consumption of 3.09 barrels. There were three other States—Michigan, Illinois, and New Jersey—in which the per capita consumption in 1925 was 2 barrels or more.

The States of Florida, Missouri, Washington, California, and the District of Columbia showed, in the order named, the largest per capita increases of the year. All the States except Arizona showed changes—32 showed increases and 16 decreases. The general average consumption for the United States was 1.38 barrels as compared with 1.29 barrels in 1924. This is the highest average per capita consumption ever recorded, as the range from 1914 to 1924 was from 0.64 to 1.29 barrels.[2]

[2] Data on per capita consumption of Portland cement by States, beginning with the year 1914, are given in preceding volumes of Mineral Resources.

Shipments of domestic Portland cement from mills into States and per capita, 1924–25, in barrels[1]

State	1924		1925	
	Total	Per capita[1]	Total	Per capita[1]
Alabama	1,872,997	0.76	2,084,922	0.85
Arizona[2]	415,146	1.04	423,523	1.04
Arkansas[2]	1,084,020	.59	800,407	.43
California	10,846,703	2.73	12,433,619	3.09
Colorado	1,337,466	1.32	1,152,498	1.13
Connecticut[2]	1,582,312	1.04	1,758,443	1.15
Delaware[2]	385,581	1.65	401,923	1.71
District of Columbia[2]	722,960	1.47	886,236	1.78
Florida[2]	2,177,233	2.02	4,150,091	3.28
Georgia	1,408,106	.46	1,438,009	.47
Idaho[2]	262,422	.54	258,553	.53
Illinois	13,328,219	1.93	14,404,947	2.07
Indiana	5,522,818	1.81	4,997,971	1.63
Iowa	3,144,001	1.26	2,704,872	1.08
Kansas	2,142,725	1.18	2,257,447	1.25
Kentucky	1,763,538	.71	1,796,397	.72
Louisiana[2]	1,260,231	.67	1,100,099	.59
Maine[2]	386,593	.49	333,829	.43
Maryland	1,989,182	1.30	2,127,479	1.38
Massachusetts[2]	3,359,553	.82	3,418,028	.83
Michigan	9,355,024	2.28	9,564,976	2.31
Minnesota	3,248,369	1.28	3,615,328	1.41
Mississippi[2]	527,046	.29	579,239	.32
Missouri	3,985,049	1.15	5,600,510	1.62
Montana	202,782	.32	235,525	.36
Nebraska	1,499,998	1.11	1,674,944	1.24
Nevada[2]	91,821	1.19	100,997	1.30
New Hampshire[2]	378,554	.84	426,138	.95
New Jersey	6,410,037	1.84	7,082,207	2.02
New Mexico[2]	231,970	.61	181,927	.48
New York	17,456,377	1.53	18,488,762	1.66
North Carolina[2]	2,999,559	1.09	3,024,621	1.10
North Dakota[2]	248,732	.36	341,841	.50
Ohio	9,262,652	1.48	9,221,005	1.46
Oklahoma	2,210,586	1.00	2,377,673	1.06
Oregon	1,211,462	1.44	1,318,163	1.56
Pennsylvania	12,964,163	1.40	14,932,787	1.60
Rhode Island[2]	608,355	.96	711,391	1.05
South Carolina[2]	570,631	.32	864,166	.49
South Dakota[3]	466,725	.70	461,726	.68
Tennessee	1,558,825	.65	1,644,029	.68
Texas	3,853,098	.76	4,188,910	.82
Utah	427,825	.88	381,018	.77
Vermont[2]	300,102	.85	217,286	.62
Virginia	1,701,408	.70	1,648,744	.67
Washington	1,730,483	1.18	2,427,263	1.64
West Virginia	1,661,042	1.05	1,487,663	.93
Wisconsin	4,515,256	1.62	4,105,100	1.47
Wyoming[2]	331,309	1.51	225,170	1.01
Unspecified	59,899		59,272	
	145,061,545	1.29	156,117,674	1.38
Exports reported by manufacturers but not included above[4]	986,004		1,177,538	
Total shipped from cement plants	146,047,549		157,295,212	

[1] Per capita figures based on estimate of population made by the Bureau of the Census.
[2] Noncement-producing State.
[3] South Dakota began shipping January, 1925.
[4] Includes shipments to Alaska, Hawaii, and Porto Rico.

LOCAL SUPPLIES

The following table compares the shipments from the mills within a State or group of States with the estimated consumption (State distribution of mill shipments) and indicates the surplus or deficiency in the supply of cement locally available. Consumption in the States that do not produce cement is also indicated in the preceding table. Data for 1916 to 1923 will be found in Mineral Resources of the United States for 1917 to 1923.

The surplus shown in the following table was distributed, by years, as follows: In 1924, to noncement-producing States, 18,390,855 barrels; to foreign countries and to Alaska, Hawaii, and Porto Rico, 986,004 barrels; unspecified, 59,899 barrels; in 1925, to noncement-producing States, 20,203,908 barrels; to foreign countries and to Alaska, Hawaii, and Porto Rico, 1,177,538 barrels; unspecified, 59,272 barrels.

Among the cement-producing States there are, of course, fewer deficiencies than surpluses, and certain of the deficiencies indicated are due to local conditions that did not change materially from 1924 to 1925. For instance, in 1925 Ohio showed a deficiency of more than 3,794,000 barrels, which was largely supplied from Pennsylvania's surplus of 27,000,000 barrels and from Indiana. New York, though a large producer, had a deficiency of nearly 10,000,000 barrels that was mostly supplied from the near-by Lehigh district in Pennsylvania. In Maryland, New Jersey, and West Virginia there was a shortage of more than 3,100,000 barrels, which was probably supplied in large part from the Lehigh district. The quantities consumed in the nonproducing States are of interest in comparison with the other data. Between 500,000 and 1,000,000 barrels were consumed in 1925 in each of the States of Arkansas, Mississippi, Rhode Island, and South Carolina, and in the District of Columbia. Louisiana consumed more than 1,100,000 barrels, Connecticut more than 1,758,000 barrels, North Carolina more than 3,000,000 barrels, Massachusetts more than 3,400,000 barrels, and Florida more than 4,150,000 barrels.

Estimated surplus or deficiency in local supply of Portland cement in cement-producing States, 1924-25, in barrels

State or division	1924			1925		
	Shipments from mills	Estimated consumption	Surplus or deficiency	Shipments from mills	Estimated consumption	Surplus or deficiency
Alabama	5,542,687	1,872,997	+3,669,690	6,045,967	2,084,922	+3,961,045
California	11,481,730	10,846,703	+635,027	13,109,426	12,433,619	+ 675,807
Illinois	6,955,455	13,328,219	−6,372,764	6,749,532	14,404,947	−7,655,415
Iowa	4,881,613	3,144,001	+1,737,612	4,856,849	2,704,872	+2,151,977
Kansas	5,809,646	2,142,725	+3,666,921	6,513,297	2,257,447	+4,255,850
Michigan	8,991,270	9,355,024	−363,754	10,073,453	9,564,976	+508,477
Missouri	7,711,206	3,985,049	+3,726,157	8,168,165	5,600,510	+2,567,655
New York	7,435,875	17,456,377	−10,020,502	8,534,089	18,488,762	−9,954,673
Ohio	4,298,027	9,262,652	−4,964,625	5,426,768	9,221,005	−3,794,237
Pennsylvania	40,208,860	12,964,163	+27,244,697	41,899,787	14,932,787	+26,967,000
Texas	4,488,143	3,853,698	+634,445	4,735,521	4,188,910	+546,611
Colorado and Utah	2,377,774	1,765,291	+612,483	2,018,034	1,533,516	+484,518
Oregon, Washington, and Montana	2,965,918	3,144,727	−178,809	3,805,902	3,980,951	−175,049
Georgia, Kentucky, Tennessee, and Virginia	6,551,628	6,431,877	+119,751	7,721,210	6,527,179	+1,194,031
Indiana, Wisconsin, Minnesota, Nebraska, Oklahoma, and South Dakota[1]	18,836,592	16,997,027	+1,839,565	20,048,294	17,232,742	+2,815,552
Maryland, New Jersey, and West Virginia	7,511,125	10,060,261	−2,549,136	7,588,918	10,697,349	−3,108,431
	146,047,549	126,610,791	+19,436,758	157,295,212	135,854,494	+21,440,718

[1] South Dakota began shipping in January, 1925.

The table on pages 266 and 267, which shows, by months, the shipments from Portland cement mills into States during 1925, has been compiled from monthly reports of producers but includes estimates of the distribution of shipments of three to five plants each month. Although the figures only approximate the totals shown in other tables which are based on final annual reports from the producers, they reflect the fluctuations in shipments during the year.

PRICES

AT FACTORIES

Average values of Portland cement sold at the factories as reported to the Bureau of Mines are shown in the tables of shipments by States and districts during 1924 and 1925 (pp. 258 and 259). The averages by districts ranged from $1.65 a barrel in the Virginia-Tennessee-Alabama-Georgia district to $2.26 in the Oregon-Washington-Montana district in 1925, as compared with a range from $1.69 in the Virginia-Tennessee-Alabama-Georgia district to $2.44 in the Oregon-Washington-Montana district in 1924. The general average value for the whole country showed a decrease in 1925 of more than 2 per cent, and averages were lower in all the districts except Colorado-Utah and eastern Pennsylvania-New Jersey-Maryland, and in all the States except Colorado, Maryland, Montana, Oklahoma, Pennsylvania, and Utah.

For certain States the average factory value of Portland cement may be slightly higher than it would be if the ordinary structural cement were the only kind considered in the average. This is due to the marketing of certain special cements that command a higher price. Among these are the white Portland cement made in Pennsylvania and also the cements particularly intended for shutting out water in oil wells and for stucco finish, both of which are made in California. Oil wells require a rapid-setting cement, and for stucco a cement should be more than ordinarily plastic and waterproof.

Average factory value per barrel in bulk of Portland cement, 1914–1925

1914	$0.93	1918	$1.60	1922	$1.76
1915	.86	1919	1.71	1923	1.90
1916	1.10	1920	2.02	1924	1.81
1917	1.35	1921	1.89	1925	1.77

AT MARKETS

The table on page 269 summarizes the wholesale prices of Portland cement in bulk in carload lots at the principal cities of the United States and at Montreal, Canada, for 1924 and 1925, by months, as published in the Engineering News-Record. Seeming inconsistencies in the table, such as sudden large changes in prices, suggest the inclusion of delivery charges that the explanatory footnote does not account for. The price figures may be compared in several different ways. Prices at a single locality for corresponding months in 1924 and 1925 and for the several months of the same year can readily be compared and also prices at different localities. As with factory values, the net movement of market prices in 1925, as in 1924, was downward; the decreases ranged from 2 to 92 cents a barrel.

Portland cement shipped from mills into States in 1925, by months, in barrels[1]

Shipped to—	January	February	March	April	May	June
Alabama	85,410	103,513	177,510	191,451	185,314	214,195
Alaska	132		294	709		1,284
Arizona	34,370	25,945	27,009	31,264	32,749	32,451
Arkansas	41,376	44,352	72,198	94,695	87,340	92,101
California	988,883	753,123	1,029,118	1,027,744	1,081,945	1,066,088
Colorado	42,425	69,871	102,537	131,363	125,744	120,818
Connecticut	34,810	50,026	113,668	160,616	177,292	172,564
Delaware	5,786	9,444	21,766	41,573	28,892	37,330
District of Columbia	37,285	65,176	58,474	70,765	103,996	81,334
Florida	265,463	227,811	272,094	261,180	313,846	348,330
Georgia	93,062	98,569	140,634	112,250	127,545	129,748
Hawaii	417		1,500	2,250	5,608	6,108
Idaho	2,598	11,029	17,667	28,393	28,613	28,122
Illinois	463,388	378,947	846,638	1,467,815	1,790,601	1,636,329
Indiana	139,782	143,464	255,597	433,996	569,436	617,360
Iowa	53,044	52,039	161,164	284,477	346,484	310,558
Kansas	33,588	120,405	212,402	232,220	242,880	233,522
Kentucky	52,013	68,970	115,222	174,795	195,351	231,491
Louisiana	75,992	97,638	98,193	108,250	99,402	100,016
Maine	4,837	5,238	21,702	36,163	38,435	43,541
Maryland	47,635	98,231	143,291	207,844	231,935	249,105
Massachusetts	113,101	134,591	257,381	344,406	374,243	350,620
Michigan	190,905	248,240	437,712	859,815	1,140,027	1,264,462
Minnesota	59,395	97,034	173,618	321,854	425,473	409,235
Mississippi	29,867	28,564	35,778	48,174	47,573	66,012
Missouri	115,141	162,992	379,157	489,316	652,330	583,561
Montana	5,334	6,093	16,450	23,030	28,170	28,904
Nebraska	31,832	46,281	99,780	180,951	198,333	181,516
Nevada	2,492	5,177	7,254	10,767	11,676	10,784
New Hampshire	9,419	15,911	27,592	39,906	36,814	40,837
New Jersey	157,612	243,534	498,227	722,751	721,605	737,572
New Mexico	7,911	10,320	18,865	19,699	17,141	18,406
New York	466,896	587,674	1,159,830	1,717,441	2,028,808	2,090,644
North Carolina	79,817	128,770	200,097	277,616	289,056	324,201
North Dakota	1,380	3,742	16,589	38,937	47,789	66,089
Ohio	259,628	271,075	592,069	894,683	1,054,230	1,099,767
Oklahoma	58,872	155,083	203,161	201,886	235,096	225,879
Oregon	54,117	60,816	103,813	101,661	129,048	134,038
Pennsylvania	288,916	421,519	808,636	1,250,501	1,482,560	1,869,299
Rhode Island	15,668	17,908	54,663	79,063	72,914	89,213
South Carolina	46,840	73,312	72,929	65,806	74,198	85,087
South Dakota	4,331	14,528	40,697	57,039	66,445	59,120
Tennessee	69,669	87,499	116,856	133,037	163,812	185,536
Texas	260,540	345,057	381,320	401,517	373,605	411,795
Utah	3,794	16,821	28,567	33,469	41,447	37,733
Vermont	3,129	3,060	10,312	25,353	24,178	26,978
Virginia	54,455	95,942	132,891	160,139	154,167	172,760
Washington	85,969	90,669	151,814	180,845	265,735	328,589
West Virginia	45,912	56,629	85,703	134,357	140,992	161,484
Wisconsin	113,396	73,320	142,620	358,379	507,654	569,687
Wyoming	3,492	9,181	16,358	19,981	32,466	31,290
Unspecified	15,964	26,430	46,236	34,875	8,023	3,996
	5,092,090	5,961,563	10,205,073	14,327,067	16,659,016	17,417,489
Foreign countries	69,910	53,437	73,927	66,933	75,984	83,511
Total shipped from cement plants	5,162,000	6,015,000	10,279,000	14,394,000	16,735,000	17,501,000

[1] Includes estimated distribution from four plants for January and February and for April to June, from five plants for March, and from three plants for July to December.

Portland cement shipped from mills into States in 1925, by months, in barrels—Con.

Shipped to—	July	August	September	October	November	December
Alabama	256,741	277,605	192,882	158,310	161,142	108,906
Alaska	2,816	264	455	528	132	132
Arizona	37,842	33,328	34,380	33,577	36,310	61,646
Arkansas	78,059	88,143	54,377	52,339	43,423	43,281
California	1,061,048	1,154,523	1,120,092	1,125,094	972,874	938,721
Colorado	118,272	118,335	122,128	103,024	61,541	30,872
Connecticut	176,644	194,911	232,265	230,906	148,990	56,260
Delaware	43,326	50,949	63,024	63,752	24,504	13,680
District of Columbia	82,133	83,155	84,260	94,295	106,642	57,119
Florida	341,849	310,457	522,465	535,817	251,285	439,786
Georgia	132,050	136,542	134,340	134,198	104,559	69,046
Hawaii	993	1,108	3,511	8,086	8,410	20,735
Idaho	28,498	31,846	24,959	21,228	19,245	15,993
Illinois	1,853,734	1,790,148	1,658,700	1,257,184	817,588	407,308
Indiana	658,042	690,624	625,962	476,635	233,595	114,856
Iowa	327,155	375,407	368,763	259,971	96,762	41,325
Kansas	226,787	254,074	205,607	215,258	172,945	87,368
Kentucky	229,652	220,859	196,628	139,790	99,170	63,382
Louisiana	99,111	105,440	80,907	77,948	75,513	74,364
Maine	41,475	37,277	40,051	40,243	17,453	7,028
Maryland	247,835	235,983	260,019	196,739	140,656	85,377
Massachusetts	386,058	356,341	326,615	349,702	258,733	133,365
Michigan	1,229,598	1,194,934	1,195,566	992,423	537,713	302,889
Minnesota	436,453	472,018	455,011	376,854	168,138	62,943
Mississippi	67,446	70,141	56,979	41,777	53,244	34,740
Missouri	683,097	723,916	597,568	505,730	478,531	207,230
Montana	31,486	31,638	24,598	19,205	13,819	7,382
Nebraska	203,863	210,305	206,703	193,568	82,528	34,033
Nevada	10,068	12,635	10,598	10,048	5,751	4,015
New Hampshire	41,843	52,941	48,675	52,975	35,808	22,586
New Jersey	760,944	653,685	809,251	847,301	566,337	329,054
New Mexico	16,323	17,246	12,945	15,687	16,735	10,258
New York	2,170,960	2,151,191	2,006,604	1,880,822	1,249,902	889,639
North Carolina	343,683	340,027	354,835	328,705	200,447	152,699
North Dakota	55,305	37,735	33,458	28,020	9,531	2,474
Ohio	1,099,016	1,212,138	1,118,150	870,645	545,452	339,630
Oklahoma	225,729	286,912	195,542	212,696	226,437	148,354
Oregon	143,672	157,360	157,333	155,066	73,583	46,531
Pennsylvania	1,869,377	1,852,731	1,937,173	1,490,931	945,344	597,328
Porto Rico			346		577	
Rhode Island	75,383	71,369	71,846	84,229	50,609	26,721
South Carolina	75,376	92,255	82,742	69,548	69,234	54,545
South Dakota	55,487	57,380	56,838	41,532	14,080	6,379
Tennessee	208,562	193,279	171,080	118,768	104,657	80,322
Texas	418,401	404,161	328,962	290,946	280,852	284,061
Utah	38,975	45,985	44,564	40,238	24,607	21,135
Vermont	26,245	23,698	28,794	31,509	9,301	4,066
Virginia	180,025	176,842	184,071	156,782	104,185	72,698
Washington	334,466	323,325	258,182	254,164	108,111	82,364
West Virginia	164,874	177,994	201,698	193,757	80,179	63,066
Wisconsin	562,363	626,004	513,479	285,712	173,988	77,100
Wyoming	25,691	31,042	20,461	16,522	9,403	7,968
Unspecified	48,647	10,520	74,427	36,326	29,247	8,140
	18,033,478	18,258,726	17,610,869	15,217,110	10,117,862	6,851,500
Foreign countries	97,522	124,274	100,131	91,890	69,198	65,500
Total shipped from cement plants	18,131,000	18,383,000	17,711,000	15,309,000	10,187,000	6,917,000

At a few of the cities, as Dallas, Denver, Jersey City, New Orleans, and Philadelphia, the prices throughout the year 1925 seem to have remained the same as in 1924. In others, as Chicago, Duluth, Minneapolis, Pittsburgh, and St. Paul, prices remained the same during the first 10 months of 1925 as in 1924 but declined in November and December. In these two months lower prices seem to have been almost general. At Birmingham, Dallas, Denver, Jersey City, Montreal, New Orleans, Philadelphia, Seattle, also at New York except for an increase in the delivered price in December, prices remained stationary. The three Pacific coast cities showed lower prices in 1925 than in 1924. At Los Angeles prices were lower each month; at Seattle and San Francisco they were lower except for from two to three months, when they remained the same as in 1924. At Boston and Detroit prices for January were higher in 1925 than in 1924 but showed decreases the rest of the year. From January to July but two to eight cities showed increases over the corresponding months in 1924; in July, August, and December only one showed increase; from September to November no increase is shown. As might be expected, the lowest market prices were quoted at cities near which Portland cement is manufactured, such as Duluth, Chicago, Pittsburgh, Kansas City, St. Louis, and Dallas, but there are other cities where the proximity of cement mills might be expected to bring about prices lower than those in the table. In New York two scales of prices are quoted, the higher for cement delivered, the lower for cement alongside dock.

The differences between average factory values for 1924 and 1925, by districts, and the market prices of cement at the principal cities within the several districts do not seem excessive in view of all the elements that enter into these differences. In 1924 the differences ranged from 20 cents to $1.18 a barrel and in 1925 from 21 cents to $1.16 a barrel. In most districts these differences were less than 75 cents a barrel in both years.

The increase in the prices of building materials and of all other commodities since the beginning of the World War has so seriously affected living conditions that many inquiries into the price situation have naturally followed. As the annual per capita consumption of Portland cement in the United States has reached nearly 1⅔ barrels and promises to continue to increase, the prices of such an essential building material have attracted particular interest. Considerable information is now available to show the position of cement prices among those of other structural materials and to explain the economic conditions that determine them. Data of interest in this connection are compiled and published by the United States Bureau of Labor Statistics, Department of Labor.

Wholesale prices of Portland cement per barrel in bulk in carload lots, 1924–25, by months[1]

City	January		February		March		April		May		June	
	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925
Atlanta	$2.35	$2.35	$2.35	$2.35	$2.35	$2.30	$2.35	$2.30	$2.35	$2.30	$2.35	$2.30
Baltimore	2.50	2.50	2.50	2.90	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Birmingham	2.80	2.40	2.80	2.40	2.80	2.40	2.65	2.40	2.65	2.40	2.65	2.40
Boston	2.63	2.67½	2.63	2.60	2.63	2.55	2.65	2.55	2.63	2.55	2.65	2.55
Cedar Rapids	2.38	2.38	2.40	2.44	2.40	2.44	2.40	2.44	2.40	2.44	2.40	2.44
Chicago	2.10	2.10	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
Cincinnati	2.41	2.37	2.37	2.47	2.37	2.47	2.47	2.47	2.47	2.47	2.47	2.47
Cleveland	2.41	2.39	2.41	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39
Dallas	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
Davenport	2.29	2.29	2.29	2.39	2.29	2.39	2.39	2.39	2.39	2.39	2.39	2.39
Denver	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
Detroit	2.37	2.40	2.37	2.35	2.40	2.35	2.40	2.35	2.40	2.35	2.40	2.35
Duluth	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
Indianapolis	2.31	2.31	2.31	2.41	2.31	2.41	2.41	2.41	2.41	2.41	2.41	2.41
Jersey City	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
Kansas City	2.27	2.07	2.20	2.30	2.10	2.07	2.30	2.28	2.27	2.28	2.27	2.28
Los Angeles	3.16	2.60	3.16	2.80	3.00	2.80	3.00	2.80	3.00	2.80	3.00	2.80
Milwaukee	2.25	2.25	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
Minneapolis	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42
Montreal	2.25	1.80	2.25	1.80	2.72	1.80	2.72	1.80	2.72	1.80	2.25	1.80
New Orleans	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
New York (delivered)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
New York (alongside dock to dealers)	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Peoria	2.27	2.27	2.27	2.37	2.27	2.37	2.37	2.37	2.37	2.37	2.37	2.37
Philadelphia	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41
Pittsburgh	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
St. Louis	2.20	2.20	2.20	2.30	2.20	2.30	2.20	2.30	2.30	2.30	2.30	2.30
St. Paul	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42
San Francisco	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.31	2.61	2.31	2.61	2.31
Seattle	2.90	2.65	2.90	2.65	2.90	2.65	2.90	2.65	2.90	2.65	2.90	2.65
Toledo	2.38	2.36	2.40	2.40	2.40	2.40	2.40	2.40	2.45	2.40	2.45	2.40

City	July		August		September		October		November		December	
	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925
Atlanta	$2.35	$2.40	$2.35	$2.40	$2.35	$2.25	$2.35	$2.25	$2.35	$2.25	$2.35	$2.35
Baltimore	2.50	2.50	2.50	2.50	2.90	2.50	2.90	2.50	2.50	2.50	2.50	2.50
Birmingham	2.65	3.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
Boston	2.63	2.50	2.64	2.45	2.64	2.45	2.70	2.40	2.70	2.40	2.67½	2.40
Cedar Rapids	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.34	2.44	2.34
Chicago	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.10	2.20	2.10
Cincinnati	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.37	2.47	2.37
Cleveland	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.29	2.39	2.29
Dallas	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
Davenport	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.39	2.29	2.39	2.29
Denver	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84	2.84
Detroit	2.40	2.35	2.40	2.35	2.40	2.35	2.40	2.35	2.40	2.15	2.40	2.15
Duluth	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.09	2.19	2.09
Indianapolis	2.41	2.41	2.41	2.39	2.41	2.39	2.41	2.39	2.41	2.29	2.41	2.29
Jersey City	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33
Kansas City	2.27	2.20	2.82	2.30	2.70	2.30	2.70	2.30	2.42	2.30	2.07	2.30
Los Angeles	3.00	2.52	2.75	2.52	2.83	2.52	2.98	2.52	2.60	2.52	2.60	2.52
Milwaukee	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.25
Minneapolis	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.32	2.42	2.32
Montreal	1.90	1.80	1.90	1.80	1.90	1.80	1.80	1.80	1.80	1.80	1.80	1.80
New Orleans	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
New York (delivered)	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.70
New York (alongside dock to dealers)	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Peoria	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.27	2.37	2.27
Philadelphia	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41
Pittsburgh	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.09	2.19	2.09
St. Louis	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.20	2.30	2.20
St. Paul	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.42	2.32	2.42	2.32
San Francisco	2.61	2.31	2.61	2.31	2.61	2.31	2.61	2.31	2.61	2.31	2.61	2.31
Seattle	2.90	2.65	2.90	2.65	2.90	2.65	2.90	2.65	2.65	2.65	2.65	2.65
Toledo	2.45	2.40	2.45	2.40	2.45	2.40	2.45	2.40	2.45	2.20	2.45	2.20

[1] Engineering News-Record. Prices quoted are f. o. b. points listed, without bags; cash discount not deducted.

Comparative prices of building materials in December, 1924 and 1925[1]

[Percentage of increase over prices in 1913]

	1924	1925
Building materials in general	75.1	77.0
Lime (lump), average, 15 plants	126.9	122.1
Plate glass, 3 to 5 feet, New York	81.7	69.0
Turpentine, New York	95.6	137.7
Brick, common, simple average at 82 brickyards	109.6	104.7
Linseed oil, New York	139.1	105.0
Douglas fir, No. 1, common, at mills	79.2	68.3
Yellow-pine flooring, B and better, at mills	92.8	116.3
Oak, plain white, No. 1, Cincinnati	72.4	78.4
Portland cement, simple average at 6 representative plants	75.4	68.4

[1] U. S. Department of Labor, Bureau of Labor Statistics, Wholesale Prices of Commodities, pp. 7–8 of report for December, 1925.

MANUFACTURING CONDITIONS

PLANTS

Portland cement was made at 138 plants in 1925 and at 132 plants in 1924. Six new plants produced Portland cement in 1925. These, like the six new plants in 1924, are all reported as wet-process plants and, in addition, are equipped (at the end of 1925) as follows:

Clinchfield Portland Cement Corporation, plant at Clinchfield, Houston County, Ga. Limestone, fuller's earth, and clay; clinker burned with coal; waste-heat installation; two 175-foot kilns; reported daily clinker capacity, 2,200 barrels.

Peerless Portland Cement Co., plant at Detroit, Wayne County, Mich. Limestone, clay, and caustic waste; clinker burned with coal; waste-heat installation; three 175-foot kilns; reported daily clinker capacity, 4,000 barrels.

Southwestern Portland Cement Co., plant at Osborn, Greene County, Ohio. Limestone and shale; clinker burned with coal; waste-heat installation; three 175-foot kilns; reported daily clinker capacity, 3,750 barrels.

Standard Portland Cement Co., plant at Cement, Lake County, Ohio. Limestone and clay; clinker burned with coal; two 240-foot kilns; reported estimated daily clinker capacity, 2,500 barrels.

Trinity Portland Cement Co., plant at Fort Worth, Tarrant County, Tex. Limestone and clay; clinker burned with oil; one 250-foot kiln; reported daily clinker capacity, 1,600 barrels.

Virginia Portland Cement Corporation, plant at Norfolk, Norfolk County, Va. Marl and clay; clinker burned with coal; three 219-foot kilns; reported daily clinker capacity, 3,300 barrels.

At the end of 1925 additional plants were under construction in California, Iowa, Louisiana, Ohio, and Pennsylvania.

KILNS AND FUELS

The total number of rotary kilns reported in plants that were active in 1925 was 867, compared with 818 in 1924.

As to kiln fuels, the records show that 80.2 per cent of the Portland cement produced was burned with coal alone in 1925 and 79.7 per cent in 1924; 9.9 per cent of the production was burned with crude oil in 1925 and 11.1 per cent in 1924.

Portland cement burned by different fuels, 1924–25

Fuel	1924				1925			
	Number of plants	Number of kilns	Barrels of cement	Percentage of total	Number of plants	Number of kilns	Barrels of cement	Percentage of total
Coal	106	661	118,971,392	79.7	113	696	129,737,349	80.2
Coal and crude oil	2	25	10,326,612	6.9	1	39	11,241,669	7.0
Coal and natural gas	1	6			1	6		
Crude oil and natural gas	3	12			3	21		
Crude oil	17	95	16,601,551	11.1	16	84	15,992,161	9.9
Crude oil, coal, and natural gas	2	12	3,458,554	2.3	3	14	4,687,722	2.9
Natural gas	1	7			1	7		
	132	818	149,358,109	100.0	138	867	161,658,901	100.0

WASTE-HEAT UTILIZATION

Only in comparatively recent years have Portland cement manufacturers been utilizing to any noteworthy extent the hot gases from rotary kilns to generate steam for operating plant machinery. The movement, however, dates back to 1897, when an attempt was made at a mill near Nazareth, Pa., to heat the boilers partly by kiln gases. Other tests followed at Portland Point, N. Y.

From the reports of the producers for the year 1925 information was gathered to the effect that at about 42 of the plants where waste-heat boilers were installed—more than half of which were wet-process plants—approximately 119,369 boiler horsepower per hour was developed. This total probably does not represent the full amount that could be developed at these plants.

CAPACITY

The total annual manufacturing capacity of all the active plants at the end of 1925, according to manufacturers' reports (several of which have been revised slightly for the sake of consistency) and a few estimates, was 193,558,000 barrels, an increase of over 10.5 per cent. This total includes the annual capacity, about 6,000,000 barrels of finished Portland cement, of the six new plants completed during the year. According to these figures the total production of Portland cement in 1925 was 83.5 per cent of the total capacity, whereas the production in 1924 represented 85.3 per cent of the apparent total capacity in that year. To determine the true cement-manufacturing capacity of the country is difficult. Some manufacturers give capacity totals that vary from year to year, although their reports indicate no change of equipment. For 1925 reports from five plants gave a capacity less than their production for the year, but due allowance was made for this oversight in the present estimates. The record production for one month during 1925, as in 1924, was reached in August, when 16,419,000 barrels were made, a daily average of 529,645 barrels, or over 99 per cent of the average daily capacity based on the annual capacity stated above. At this rate 193,320,425 barrels would be produced in a year. As this output was made during a period of most favorable operating conditions and liveliest demand for cement, it seems probable that the capacity stated above for 1925 fairly represents full capacity.

Portland cement manufacturing capacity of the United States by commercial districts, 1924–25

District	Estimated capacity (barrels)		Percentage of capacity utilized	
	1924	1925	1924	1925
Eastern Pennsylvania, New Jersey, and Maryland	43, 831, 000	43, 607, 000	88. 2	92. 4
New York	9, 107, 000	10, 199, 000	83. 1	86. 0
Ohio, Western Pennsylvania, and West Virginia	16, 289, 000	19, 144, 000	88. 0	81. 3
Michigan	11, 501, 000	15, 301, 000	80. 5	71. 5
Wisconsin, Illinois, Indiana, and Kentucky	23, 532, 000	26, 091, 000	92. 7	90. 2
Virginia, Tennessee, Alabama, and Georgia	12, 889, 000	15, 792, 000	88. 5	85. 5
Eastern Missouri, Iowa, Minnesota, and South Dakota	17, 675, 000	18, 942, 000	83. 9	76. 9
Western Missouri, Nebraska, Kansas, and Oklahoma	12, 202, 000	13, 240, 000	81. 1	80. 6
Texas	5, 175, 000	5, 880, 000	88. 2	82. 6
Colorado and Utah	3, 205, 000	3, 275, 000	75. 6	61. 2
California	14, 727, 000	16, 395, 000	78. 9	79. 9
Oregon, Washington, and Montana	4, 967, 000	5, 692, 000	60. 1	68. 0
	175, 100, 000	193, 558, 000	85. 3	83. 5

MASONRY, NATURAL, AND PUZZOLAN CEMENTS

The term "masonry cement" is used here to designate certain cements made, like natural cements, by grinding calcined calcareous rock, that are being used largely in mortar for laying brick and stone, although, of course, other hydraulic cements are also suitable for masonry.

Natural cement, including masonry cement, was produced in 1925 in nine plants, situated as follows: Near Rosendale, N. Y.; Siegfried, Pa.; Lisbon, Ohio; Speeds, Ind.; Utica, Ill.; Fort Scott, Kans.; Kosmosdale, Ky.; and Austin and Mankota, Minn.

One manufacturer with a plant at Birmingham, Ala., reports an output of puzzolan or slag-lime cement, and in order that this output may be included in the cement totals for the United States without revealing confidential information it is included with the statistics of masonry and natural cements.

The next table, which gives figures on the output of masonry, natural, and puzzolan cements in 1924 and 1925, indicates an increase in quantity of 23.5 per cent and in value of 27.2 per cent, as compared with the output in 1924. The average factory value per barrel in 1925 was $1.46, compared with $1.41 in 1924. The output has been expressed in terms of 376-pound barrels, to correspond with the statistics for Portland cement.

At the end of 1925 an additional plant to manufacture natural cement was reported under construction at Akron, N. Y.

The second table presents quoted wholesale prices of these cements in lots of 500 barrels or more, exclusive of bags, f. o. b. at a number of widely separated cities in the United States, as published by the Engineering News-Record; but in order to make a consistent comparison of these prices the reader should note that barrels of 240, 250, 265, 300, 320, and 340 pounds are involved instead of the standard Portland cement barrel of 376 pounds. These cements are packed four sacks to the barrel, each sack holding about 1 cubic foot, as with Portland cement, but the lower specific gravity of the non-Portland cements accounts for their lighter weight per barrel.

Masonry, natural, and puzzolan cements shipped from plants in the United States, 1924–25

State	1924			1925		
	Producing plants	Barrels of 376 pounds	Value	Producing plants	Barrels of 376 pounds	Value
Alabama[1]	1	745,369	$1,147,088	1	939,062	$1,491,333
Illinois	1			1		
Indiana	1			1		
Kansas	1	673,092	859,471	1	812,663	1,060,250
Kentucky	1			1		
Minnesota	2			2		
New York	1			1		
Ohio	1			1		
Pennsylvania	1			1		
	10	1,418,461	2,006,559	10	1,751,725	2,551,583

[1] Puzzolan only.

Wholesale prices of masonry, natural, and puzzolan cements, 1924–25, by months[1]

[Per barrel except as otherwise noted[2]]

City and brand	January		February		March		April	
	1924	1925	1924	1925	1924	1925	1924	1925
Birmingham (Magnolia)	$2.10	$2.25	$2.10	$2.40	$2.10	$2.40	$2.10	$2.40
Boston (Rosendale)	2.80	2.50	2.65	2.50	2.70	2.50	2.70	2.50
Cincinnati (Utica)	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Kansas City (Fort Scott)	1.50	1.50	1.75	1.50	1.80	1.50	1.80	1.35
Minneapolis (Rosendale)	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
St. Louis (Carney)	2.25	2.35	2.45	2.35	2.45	2.35	1.95	2.35

City and brand	May		June		July		August	
	1924	1925	1924	1925	1924	1925	1924	1925
Birmingham (Magnolia)	$2.10	$2.40	$2.10	$2.40	$2.10	$2.40	$2.10	$2.40
Boston (Rosendale)	2.60	2.50	2.60	2.50	2.50	2.50	2.50	2.50
Cincinnati (Utica)	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Kansas City (Fort Scott)	1.80	1.35	1.80	1.35	1.80	1.35	1.50	1.35
Minneapolis (Rosendale)	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
St. Louis (Carney)	1.95	2.35	2.45	2.30	2.45	2.30	2.35	2.30

City and brand	September		October		November		December	
	1924	1925	1924	1925	1924	1925	1924	1925
Birmingham (Magnolia)	$2.10	$2.40	$2.10	$2.40	$2.10	$2.40	$2.25	$2.40
Boston (Rosendale)	2.50	2.75	2.50	2.75	2.50	2.75	2.50	2.75
Cincinnati (Utica)	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
Kansas City (Fort Scott)	1.50	1.65	1.35	1.45	1.50	1.35	1.50	1.35
Minneapolis (Rosendale)	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
St. Louis (Carney)	2.35	2.35	2.35	2.35	2.35	2.50	2.35	2.50

[1] Engineering News-Record. Price to dealers per barrel for 500 barrels or more f. o. b., exclusive of bags; unless otherwise designated.

[2] Available information indicates that the weights per barrel of these cements are as follows: Rosendale, 320 pounds; Utica, 265 pounds; Fort Scott, 240 pounds; Carney, 250 pounds; Magnolia (puzzolan cement), 320 pounds.

FOREIGN TRADE IN CEMENT[3]

EXPORTS

In 1925 the hydraulic cement exported to foreign countries and to the Philippine Islands and the Virgin Islands of the United States, most of it Portland cement, increased 16 per cent in quantity and 15 per cent in value as compared with 1924. The quantity exported in 1925 was about 0.6 per cent of the total shipments of hydraulic cement from mills in that year. The average value at the ports of export was $2.95 a barrel, as compared with $2.98 in 1924.

The destinations of the exports were approximately as follows: To Cuba, 335,000 barrels; other West Indies, 75,000 barrels; South America, 315,000 barrels; Mexico, 137,000 barrels; Central America, 96,000 barrels; Canada, 16,000 barrels; and other countries, 45,000 barrels. The export trade varies from year to year but has never reached large proportions. The total quantity exported in 1925, which was largely Portland cement, represented about 0.5 per cent of the producing capacity of the Portland cement plants alone in that year. During recent years strong competition from manufacturers in Europe, where labor costs are much lower than in the United States, has restricted the foreign market for American cement.

Hydraulic cement exported from the United States, 1924–25, by countries

Country	1924		1925	
	Barrels	Value	Barrels	Value
North America:				
Canada	11,380	$46,774	16,487	$69,760
Central America—				
British Honduras	250	663	2	20
Costa Rica	5,518	19,188	2,203	8,039
Guatemala	4,295	12,967	3,438	10,126
Honduras	20,075	55,182	20,895	56,986
Nicaragua	4,673	17,260	2,616	9,439
Panama	29,238	77,325	60,983	159,111
Salvador	7,808	31,045	5,986	21,642
Mexico	126,712	398,802	136,957	390,493
Miquelon, Langley, and St. Pierre Islands	100	265	200	510
Newfoundland and Labrador	17	126	1,960	5,515
West Indies—				
British—				
Barbados	9	68	12	82
Bermuda	3,488	9,695	1,155	3,483
Jamaica	65	316	14	103
Trinidad and Tobago	191	1,288	230	914
Other British	11,884	30,327	20,704	48,203
Cuba	330,356	820,998	334,863	791,651
Dominican Republic	24,463	65,732	26,216	64,304
Dutch	583	1,568	919	2,437
French	333	885		
Haiti	14,179	32,992	25,659	66,040
Virgin Islands of the United States	370	1,005	183	551
South America:				
Argentina	23,837	133,752	40,933	230,800
Bolivia	2,827	6,897	477	2,591
Brazil	10,795	61,363	12,893	73,249
Chile	6,388	27,889	4,400	19,831
Colombia	58,867	152,408	88,680	226,073
Ecuador	6,630	19,298	5,487	17,256
Falkland Islands	85	340		

[3] Figures on exports and imports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Hydraulic cement exported from the United States, 1924–25, by countries—Contd.

Country	1924		1925	
	Barrels	Value	Barrels	Value
South America—Continued.				
Guiana—				
British	59	$411	121	$804
Dutch	210	619	1,062	3,102
French	100	874	330	842
Peru	51,736	142,073	39,454	108,957
Uruguay	7,055	41,068	8,572	49,540
Venezuela	81,309	222,445	112,524	302,570
Europe:				
Azores and Madeira Islands	25	174		
Belgium	57	575		
Czechoslovakia			5	36
Denmark			21	149
Finland			25	162
Germany	250	1,567	658	3,840
Greece	185	1,120	210	1,209
Irish Free State			201	1,156
Italy	3	20	10	59
Netherlands	93	747	12	47
Norway	159	1,077	327	2,079
Poland and Danzig			1	7
Portugal	6	53	20	54
Spain	2,242	13,768	2,033	12,225
Sweden			7	43
Switzerland	5	41		
United Kingdom	15,512	93,283	21,718	129,130
Asia:				
China	952	5,755	4,148	25,139
Chosen	11	115		
East Indies—				
British—				
Ceylon	20	160	415	2,969
India	906	6,326	2,173	13,494
Straits Settlements	1,274	7,441	1,703	10,412
Dutch—				
Java and Madura	1,024	6,158	575	3,210
Other Dutch	14	128		
Hongkong	593	4,123	375	2,225
Japan	327	2,583	47	424
Palestine and Syria	252	1,549	1,547	9,061
Philippine Islands	211	1,605	366	2,545
Siam	50	344	50	317
Other	10	44		
Africa:				
British—				
East			19	57
South	197	1,364	81	405
Egypt	11	68		
Liberia			25	61
Portuguese—Other	171	925	33	107
Oceania:				
British—				
Australia	2,300	13,283	3,685	22,833
New Zealand	2,386	15,457	2,257	14,027
Other British	109	383	125	402
French	256	858		
Other	47	143	110	220
	878,543	2,615,154	1,019,597	3,003,128

Domestic hydraulic cement shipped to Alaska, Hawaii, and Porto Rico, 1924–25

	1924		1925	
	Barrels	Value	Barrels	Value
Alaska	19,877	$74,053	15,552	$49,611
Hawaii	53,520	153,126	37,795	85,901
Porto Rico	98,001	230,525	122,516	285,354
	171,398	457,704	175,863	420,866

Hydraulic cement exported from the United States, 1916–1925

Year	Barrels	Value	Percentage of total shipments from mills	Year	Barrels	Value	Percentage of total shipments from mills
1916	2,563,976	$3,828,231	2.7	1921	1,181,014	$4,276,986	1.2
1917	2,586,215	5,328,536	2.8	1922	1,127,845	3,206,201	1.0
1918	2,252,446	5,912,166	3.2	1923	1,001,688	2,944,174	.7
1919	2,463,573	7,513,389	2.9	1924	878,543	2,615,154	.6
1920	2,985,807	10,045,369	3.1	1925	1,019,597	3,003,128	.6

IMPORTS

The quantities given in the following tables of imports include hydraulic cement of all kinds. Some of the cement imported was evidently not manufactured in the country from which it was shipped to the United States.

Imports of hydraulic cement into the United States in 1925—more than 3,655,000 barrels—exceeded those of any preceding year and showed an increase of 81.8 per cent over 1924. The imports received were approximately as follows: From Belgium, 1,919,000 barrels; Canada, 711,000 barrels; Norway, 594,000 barrels; Denmark, 351,000 barrels; Estonia, 34,000 barrels; Germany, 17,000 barrels; France, 12,000 barrels; Japan, 10,000 barrels; and other countries, 6,619 barrels. The districts into which more than 300,000 barrels were imported in 1925 are, in order, Florida, Los Angeles, St. Lawrence, Massachusetts, and Porto Rico. The imports into Florida were nearly 1,000,000 barrels. The average of the values assigned to the imports, which are supposed to represent the market values in the foreign countries from which the material is exported, including the costs of containers or coverings, was $1.59 a barrel in 1925 and $1.55 in 1924.

The tariff act of 1922 put hydraulic cements on the free list, with the proviso that if any country imposes a duty on such cement coming from the United States an equal duty shall be imposed upon such cement coming into the United States from that country.

Roman, Portland, and other hydraulic cements imported into the United States, 1924–25, by countries

[General imports]

Country	1924		1925	
	Barrels	Value	Barrels	Value
Belgium	1,021,213	$1,581,662	1,919,239	$2,994,338
Canada	42,953½	71,091	711,051	1,097,071
China	(1)	2		
Denmark	346,354	488,633	351,484	528,479
Estonia			33,690	82,830
France	5,451	8,503	12,451	21,960
Germany	11,957	17,814	16,961	17,412
Greece			(1)	2
Italy	6	11		
Japan	810	1,723	10,193	16,250
Kwantung	602	837	30	35
Netherlands	(1)	3		
Norway	532,089	858,073	593,629	1,041,868
Philippine Islands	5 010	12,105		
Spain	6	10		
Sweden	15,466	31,794		
Switzerland	12	57		
United Kingdom	28,852	44,031	6,160	12,977
Virgin Islands of the United States	155	215	322	430
West Indies—("Other British")			107	275
	2,010,936	3,116,564	3,655,317	5,813,928

[1] Less than 1 ton; number of barrels not recorded.

Roman, Portland, and other hydraulic cements imported into the United States, 1924–25, by districts

[General imports]

District	1924		1925	
	Barrels	Value	Barrels	Value
Buffalo	6,458	$10,424	60,319	$96,469
Chicago	(1)	18	(1)	11
Dakota			60	184
Florida	121,836	181,064	973,017	1,641,983
Galveston	12	22		
Hawaii	226,556	353,133	197,871	324,955
Los Angeles	613,605	1,024,136	370,130	552,874
Maine and New Hampshire	3,324	4,829	32,491	49,579
Massachusetts	58,198	87,781	321,255	545,834
Mobile			41,684	84,081
New Orleans	93,294	167,082	157,014	242,087
New York	75,064	106,159	15,853	27,999
Ohio			(1)	10
Oregon	34,094	77,606	116,009	180,154
Philadelphia	167,654	178,099	282,365	391,191
Porto Rico	333,230	462,241	318,135	452,890
Rochester	2,580	3,252	9,258	11,068
St. Lawrence	3,837	6,392	357,625	564,646
San Francisco	106,865	179,738	131,421	206,341
South Carolina	10,580	15,414	45,867	64,630
Vermont	27,237	42,152	54,380	80,113
Virginia	(1)	3	1,150	1,749
Washington	126,512	217,019	169,413	295,080
	2,010,936	3,116,564	3,655,317	5,813,928

[1] Less than 1 ton; number of barrels not recorded.

Roman, Portland, and other hydraulic cements imported into the United States in 1925, by countries and districts

[General imports]

Country and district	Barrels	Value
Belgium:		
Florida	554,769	$888,949
Hawaii	71,591	97,583
Los Angeles	362,970	538,853
Massachusetts	170,591	286,919
Mobile	41,684	84,081
New Orleans	85,054	130,701
New York	7,518	10,504
Oregon	88,748	136,706
Philadelphia	282,365	391,191
Porto Rico	9,008	15,378
San Francisco	111,142	178,982
South Carolina	36,871	51,282
Virginia	1,150	1,749
Washington	95,778	181,460
	1,919,239	2,994,338
Canada:		
Buffalo	60,319	96,469
Dakota	60	184
Florida	226,550	338,252
Maine and New Hampshire	2,567	5,464
Oregon	137	351
Rochester	9,258	11,068
St. Lawrence	357,625	564,646
Vermont	54,380	80,113
Washington	155	524
	711,051	1,097,071
Denmark:		
Chicago	(1)	11
Florida	37,531	84,225
Oregon	250	600
Porto Rico	308,722	436,945
San Francisco	1,990	3,285
Washington	2,991	3,413
	351,484	528,479
Estonia: Hawaii	33,690	82,830
France:		
Los Angeles	816	2,120
New Orleans	5	20
New York	8,335	17,488
France—Continued.		
San Francisco	3,020	$1,628
Washington	274	704
	12,451	21,960
Germany:		
New Orleans	16,961	17,408
New York	(1)	4
	16,961	17,412
Greece: New York	(1)	3
Japan:		
Hawaii	10,193	16,237
San Francisco	(1)	13
	10,193	16,250
Kwantung: San Francisco	30	35
Norway:		
Florida	154,060	330,282
Hawaii	82,397	128,305
Los Angeles	4,998	8,000
Maine and New Hampshire	29,924	44,115
Massachusetts	150,664	258,915
New Orleans	50,614	85,891
Oregon	26,874	42,490
San Francisco	15,239	22,398
South Carolina	8,996	13,348
Washington	69,863	108,124
	593,629	1,041,868
United Kingdom:		
Los Angeles	1,346	3,901
New Orleans	4,379	8,067
Ohio	(1)	10
Oregon	(1)	7
Porto Rico	83	137
Washington	352	855
	6,160	12,977
Virgin Islands: Porto Rico	322	430
West Indies ("Other British"): Florida	107	275
	3,655,317	5,813,928

[1] Less than 1 ton; number of barrels not recorded.

Hydraulic cement imported for consumption in the United States, 1916–1925

Year	Barrels[1]	Value	Year	Barrels[1]	Value
1916	1,836	$4,942	1921	122,317	$388,842
1917	2,323	6,076	1922	355,931	692,429
1918	305	1,200	1923	1,767,264	3,145,977
1919	8,931	52,636	1924	2,023,663	3,139,788
1920	524,604	1,254,729	1925	3,667,458	5,836,482

[1] Barrels of 376 pounds in 1920 to 1925 and 380 pounds in earlier years.

CEMENT PRODUCTION IN CANADA

According to the Dominion Bureau of Statistics, the total mill output of Portland cement in Canada in 1925 was 7,869,946 barrels. The shipments amounted to 8,116,597 barrels, valued at $14,046,704, compared with 7,498,624 barrels, valued at $13,398,411, in 1924—an increase of 617,973 barrels and of $648,293. The average selling price over the whole Dominion, computed from the total quantity sold and the total value as given, was $1.73 a barrel in 1925 and $1.79 a barrel in 1924.

Consumption of cement in Canada in 1925 was reported considerably lower than in 1924. As compared with 1913, the consumption in 1925 showed a decrease of 19.9 per cent.

Imports in 1925 amounted to 21,849 barrels, having an average value of $2.89 a barrel, as compared with an average of $2.50 a barrel in 1924. Exports of Portland cement amounted to 997,915 barrels, with an invoiced value of $1,498,495.

The total capital employed by the seven firms making cement in 1925 was $38,081,583. Employment was furnished 105 salaried employees and 1,821 wage earners; their combined earnings amounted to $2,511,400. Cost of fuel and electricity totaled $2,848,904, of which $2,229,065 was expended for fuel and $619,839 for electric power.

Summary statistics of the cement industry in Canada, 1924–25[1]

	1924		1925	
	Barrels	Value	Barrels	Value
Output	7,768,652		7,869,946	
Sold or used	7,498,624	$13,398,411	8,116,597	$14,046,704
Stocks Dec. 31	1,521,574		1,274,923	
Imports:				
Portland cement	27,672	69,320	21,849	63,067
Manufactures		9,772		13,753
Exports	153,520	213,845	997,915	1,498,495
Consumption	7,372,776		7,140,531	

[1] Dominion Bureau of Statistics.

Cement is produced in Quebec, Ontario, Manitoba, Alberta, and British Columbia. Formerly puzzolan cement was made from blast-furnace slag in Nova Scotia, but in recent years production has been discontinued.

The average selling price a barrel f. o. b. plant, by Provinces, was as follows: Quebec, $1.69; Ontario, $1.52; Manitoba, $2.55; Alberta, $2.31; and British Columbia, $2.37.

The following table shows sales from mills in 1924 and 1925, by Provinces.

Cement sold by Canadian mills, 1924–25, by Provinces[1]

Province	1924		1925	
	Barrels	Value	Barrels	Value
Quebec	2,758,316	$4,796,959	3,365,802	$5,689,991
Ontario	3,564,499	5,668,671	3,462,358	5,253,911
Manitoba	286,948	746,750	407,395	1,037,929
Alberta	416,534	945,700	395,857	913,529
British Columbia	472,327	1,240,331	485,185	1,151,344
Canada	7,498,624	13,398,411	8,116,597	14,046,704

[1]Dominion Bureau of Statistics.

SAND AND GRAVEL

By Estelle R. Phillips

PRODUCTION

According to reports from producers, the sand and gravel sold or used by producers in 1925 in the United States amounted to 172,001,473 short tons, valued at $107,542,123, an increase of 10 per cent in quantity and 11 per cent in value as compared with 1924. Sand alone amounted to 87,182,222 tons, valued at $55,148,325, an increase of 15 per cent in quantity and 13 per cent in value. Gravel alone amounted to 84,819,251 tons, valued at $52,393,798, an increase of 5 per cent in quantity and 9 per cent in value. In both 1924 and 1925 New York led all other States in total quantity of sand and gravel sold or used by producers; Pennsylvania ranked first in total value, and West Virginia first in average value.

Sand and gravel sold or used by producers in the United States, 1916–1925

Year	Sand		Gravel (including railroad ballast)		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	42, 963, 978	$17, 589, 849	46, 127, 754	$12, 220, 146	89, 091, 732	$29, 809, 995
1917	40, 845, 506	21, 788, 743	35, 573, 819	13, 508, 189	76, 419, 325	35, 296, 932
1918	33, 119, 820	24, 363, 769	28, 704, 606	13, 563, 310	61, 824, 426	37, 927, 079
1919	35, 969, 736	26, 389, 679	34, 606, 671	19, 561, 877	70, 576, 407	45, 951, 556
1920	43, 776, 142	39, 198, 614	38, 265, 246	26, 462, 991	82, 041, 388	65, 661, 605
1921	38, 294, 954	29, 049, 950	41, 550, 054	27, 434, 295	79, 845, 008	56, 484, 245
1922	49, 694, 923	35, 469, 920	45, 172, 123	29, 147, 744	94, 867, 046	64, 617, 664
1923	67, 365, 271	48, 473, 565	72, 566, 882	42, 430, 089	139, 932, 153	90, 903, 654
1924	75, 572, 010	48, 844, 465	80, 658, 053	48, 168, 650	156, 230, 063	97, 013, 115
1925	87, 182, 222	55, 148, 325	84, 819, 251	52, 393, 798	172, 001, 473	107, 542, 123

Sand and gravel sold or used by producers in the United States, 1924–25, by uses

Use	1924		1925	
	Short tons	Value	Short tons	Value
Sand:				
Glass	2, 169, 899	$3, 718, 973	2, 334, 921	$3, 836, 085
Molding	4, 403, 893	4, 995, 268	4, 995, 428	5, 400, 618
Building	41, 376, 425	23, 455, 393	45, 287, 240	26, 306, 463
Paving	20, 707, 875	11, 595, 499	24, 876, 814	13, 659, 228
Grinding and polishing	1, 756, 058	2, 707, 583	1, 824, 449	2, 525, 180
Fire or furnace	237, 143	291, 175	343, 716	392, 932
Engine	2, 024, 930	1, 344, 935	2, 261, 635	1, 395, 890
Filter	74, 828	150, 239	106, 462	249, 141
Other	2, 820, 959	585, 400	5, 151, 557	1, 382, 788
Total	75, 572, 010	48, 844, 465	87, 182, 222	55, 148, 325
Gravel:				
Building	30, 486, 874	22, 718, 803	32, 759, 151	24, 589, 689
Paving	28, 830, 336	18, 773, 832	32, 574, 570	21, 411, 672
Railroad ballast	21, 340, 843	6, 676, 015	19, 485, 530	6, 392, 437
Total	80, 658, 053	48, 168, 650	84, 819, 251	52, 393, 798
Grand total	156, 230, 063	97, 013, 115	172, 001, 473	107, 542, 123

Sand and gravel sold or used by producers in the United States in 1924, by States and uses

State	Glass sand		Molding sand		Building sand		Paving sand		Grinding and polishing sand		Fire or furnace sand		Engine sand	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama			19,205	$19,325	391,327	$128,100	247,495	$122,682	(1)	(1)	(1)	(1)	(1)	(1)
Arizona					(1)	(1)							(1)	(1)
Arkansas	(1)	(1)	(1)	(1)	52,576	41,666	188,065	128,565					(1)	(1)
California	(1)	(1)	26,083	50,935	3,536,109	1,999,208	1,200,532	691,826	(1)	(1)	(1)	(1)	27,714	$13,978
Colorado			(1)	(1)	369,385	107,952	161,381	105,571					(1)	(1)
Connecticut			1,669	1,434	508,579	385,343	(1)	(1)	(1)	(1)			(1)	(1)
Delaware			12,511	11,268	13,436	11,004	(1)	(1)					(1)	(1)
District of Columbia					(1)	(1)	(1)	(1)						
Florida					376,595	215,461	169,584	55,132					(1)	(1)
Georgia	14,100	$8,545	15,852	3,181	286,523	99,618	420,728	90,364	3,880	$1,374	(1)	(1)	18,368	5,840
Hawaii					(1)	(1)	(1)	(1)						
Idaho					3,000	2,700	(1)	(1)					270	250
Illinois	601,509	640,655	759,248	637,961	3,255,710	1,595,084	1,949,338	992,838	271,254	480,184	9,148	$16,634	160,387	82,110
Indiana	(1)	(1)	573,979	252,674	1,798,633	634,260	2,444,949	970,403	(1)	(1)	(1)	(1)	124,534	35,071
Iowa			(1)	(1)	653,031	317,068	575,835	234,966	(1)	(1)			47,607	24,661
Kansas					1,078,101	709,829	316,363	190,633					18,549	8,775
Kentucky	(1)	(1)	36,792	46,295	572,483	390,922	151,846	103,533	(1)	(1)	(1)	(1)	22,011	24,902
Louisiana	(1)	(1)			363,606	263,463	(1)	(1)					(1)	(1)
Maine					17,866	9,521	15,552	10,418	(1)	(1)			(1)	(1)
Maryland	(1)	(1)	(1)	(1)	1,195,671	775,896	179,497	150,659					36,265	81,165
Massachusetts	(1)	(1)	34,447	22,699	1,249,050	951,072	99,900	75,897	8,931	16,748	(1)	(1)	65,455	54,288
Michigan			236,766	139,648	2,049,487	907,327	1,620,066	689,438	248,635	77,226	(1)	(1)	2,307	1,159
Minnesota			12,803	15,029	770,564	377,296	326,278	165,980	3,804	9,187			39,931	17,367
Mississippi			720	540	181,144	79,259	100,162	46,997					22,912	5,943
Missouri	161,604	225,963	73,155	49,733	832,536	467,874	616,278	285,483	(1)	(1)			(1)	(1)
Montana					(1)	(1)	10,654	6,398						
Nebraska			4,000	6,000	694,231	233,300	113,284	67,037					122,658	31,976
Nevada													22,942	2,089
New Hampshire					83,567	66,098	75,248	60,249						
New Jersey	184,831	298,297	424,470	580,856	1,385,392	815,315	937,966	533,689	101,056	250,698	29,011	42,612	51,724	24,358
New Mexico			83	75	(1)	(1)	(1)	(1)	550	750			22,148	9,234
New York	(1)	(1)	607,089	1,040,735	6,837,896	3,248,302	1,704,351	1,082,249	50	250	5,743	4,481	115,756	70,817
North Carolina	(1)	(1)	(1)	(1)	40,250	18,142	403,052	168,156					18,663	7,774
North Dakota					(1)	(1)	(1)	(1)						
Ohio	47,154	109,539	917,733	1,206,501	2,697,376	1,866,432	1,450,374	995,410	72,579	259,478	39,106	87,995	83,711	47,895
Oklahoma	28,871	50,523			506,738	212,088	560,555	232,321	11,682	7,828			25,636	15,710
Oregon					348,203	334,916	103,010	78,033					10,592	3,284

Pennsylvania	439,723	932,572	477,087	725,981	4,225,100	3,352,585	1,502,227	1,459,762	651,956	1,047,186	23,649	42,911	343,520	379,274
Rhode Island			(1)	(1)	(1)	(1)	(1)	(1)						
South Carolina					79,135	30,013	252,052	99,093					(1)	(1)
South Dakota					41,417	32,010	24,160	17,189					(1)	(1)
Tennessee			18,468	18,909	694,657	616,661	167,942	111,176	74,670	65,767	2,618	2,218	33,782	27,342
Texas	(1)	(1)	(1)	(1)	1,010,119	447,162	230,125	137,284	100	600	7,450	4,600	46,225	18,465
Utah					34,755	14,376	34,088	14,016	(1)	(1)			(1)	(1)
Vermont			(1)	(1)	2,433	2,338	4,600	4,885	(1)	(1)			1,600	850
Virginia	55,003	124,597	12,082	13,643	498,815	293,001	281,828	127,154	(1)	(1)	(1)	(1)	121,151	53,760
Washington			(1)	(1)	488,231	246,982	500,957	277,267					41,966	14,990
West Virginia	466,125	1,092,524	(1)	(1)	326,816	397,195	378,033	366,680	(1)	(1)	4,259	6,187	162,407	179,801
Wisconsin			81,337	64,803	1,703,946	577,232	709,877	307,183	17,200	36,750	5,000	7,500	60,274	26,471
Wyoming					(1)	(1)	29,048	21,654					(1)	(1)
Undistributed[2]	170,979	235,758	58,314	87,043	181,936	181,322	450,595	317,229	289,711	453,557	111,159	76,037	153,865	75,336
	2,169,899	3,718,973	4,403,893	4,995,268	42,376,425	23,455,393	20,707,875	11,595,499	1,756,058	2,707,583	237,143	291,175	2,024,930	1,344,935
Average value		1.71		1.13		0.57		0.56		1.54		1.23		0.66

[1] Included under "Undistributed."

[2] Includes items entered as "(1)."

Sand and gravel sold or used by producers in the United States in 1924, by States and uses—Continued

State	Filter sand		Other sands		Building gravel		Paving gravel		Railroad ballast gravel		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama	(1)	(1)	(1)	(1)	349,475	$229,591	511,914	$315,066	641,579	$68,051	2,443,753	$917,914
Arizona					(1)	(1)			(1)	(1)	69,225	17,752
Arkansas			(1)	(1)	68,458	51,817	669,185	401,845	1,918,657	$67,119	2,944,022	1,560,379
California	(1)	(1)	16,753	$8,634	3,433,634	2,127,865	1,731,708	1,382,683	1,129,369	331,606	11,132,930	6,653,536
Colorado			(1)	(1)	116,673	85,371	301,102	424,842	269,169	43,145	1,219,526	799,215
Connecticut			(1)	(1)	389,916	408,017	62,615	42,355			1,191,421	1,175,757
Delaware	(1)	(1)	(1)	(1)	(1)	(1)					41,499	33,271
District of Columbia					(1)	(1)					(1)	(1)
Florida					(1)	(1)	(1)	(1)			645,917	375,853
Georgia			(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	874,527	242,754
Hawaii							(1)	(1)			(1)	(1)
Idaho					(1)	(1)	30,608	10,416	(1)	(1)	113,028	33,734
Illinois	(1)	(1)	(1)	(1)	2,382,599	1,324,295	1,841,225	1,086,104	1,025,638	367,292	12,313,979	7,281,766
Indiana			(1)	(1)	1,144,447	649,851	3,423,406	1,649,411	2,011,216	711,004	12,933,373	5,070,339
Iowa	(1)	(1)	10,879	3,954	311,558	289,584	563,776	483,003	226,862	62,699	2,427,626	1,473,066
Kansas	4,200	$2,250	4,886	1,064	297,463	150,755	162,398	159,508	1,008	202	1,882,968	1,223,016
Kentucky			(1)	(1)	626,988	396,867	635,245	403,363	1,379,182	239,189	3,442,457	1,629,973
Louisiana			(1)	(1)	570,052	501,205	1,350,705	961,896	589,649	456,077	3,132,447	2,287,495
Maine					24,245	32,984	39,270	43,581	201,542	47,718	303,398	149,454
Maryland			(1)	(1)	916,329	1,223,534	32,387	26,633	1,000	200	2,418,137	2,368,813
Massachusetts	(1)	(1)	1,357	6,705	749,003	913,280	600,420	391,117	(1)	(1)	2,904,911	2,496,148
Michigan			(1)	(1)	3,339,045	2,269,142	3,228,893	1,712,910	625,635	170,894	11,381,084	5,975,757
Minnesota	5,557	19,450	103,751	8,077	623,791	717,482	485,329	351,296	628,199	201,865	3,000,007	1,883,029
Mississippi			100	500	126,904	88,855	1,269,132	620,514	741,837	291,680	2,442,911	1,134,288
Missouri			(1)	(1)	852,538	498,086	597,304	277,810	817,745	145,440	4,081,200	2,053,436
Montana			(1)	(1)	20,648	15,517	23,866	15,783	500,997	127,178	597,161	172,151
Nebraska			26,943	8,517	712,860	480,166	340,172	233,568	84,252	38,935	2,098,400	1,099,499
Nevada					170	53			719,696	150,503	742,808	152,645
New Hampshire					22,697	44,313	303,509	244,974	10,581	380	495,602	416,014
New Jersey	21,065	59,857	9,999	9,500	594,592	523,486	228,255	207,096			3,968,361	3,345,764
New Mexico	110	150			40,149	33,397	112,426	84,809	360,733	93,690	526,787	267,110
New York	14,792	11,758	(1)	(1)	2,771,860	2,108,703	1,255,448	962,790	70,246	40,100	13,397,540	8,583,193
North Carolina			2,250	2,800	221,189	270,081	383,113	406,295	(1)	(1)	1,098,192	889,050
North Dakota					(1)	(1)	(1)	(1)	249,116	27,214	312,966	86,366
Ohio	(1)	(1)	(1)	(1)	2,117,685	1,296,511	1,538,768	1,010,147	1,378,875	549,175	10,379,361	7,441,659
Oklahoma			8,702	1,273	134,679	75,240	433,281	239,555	136,124	59,917	1,846,268	894,455
Oregon			27,870	5,098	568,801	400,699	913,144	672,282	266,436	120,802	2,238,056	1,615,114
Pennsylvania	(1)	(1)	(1)	(1)	2,450,313	1,952,139	1,086,860	945,074	63,186	24,590	11,315,209	10,927,752
Rhode Island					(1)	(1)	(1)	(1)			46,378	35,932
South Carolina	(1)	(1)	(1)	(1)	(1)	(1)	114,032	110,033	(1)	(1)	743,746	364,977
South Dakota	(1)	(1)	(1)	(1)	14,721	13,123	(1)	(1)	208,991	25,096	323,303	113,602

Tennessee					358,264	322,656	449,770	267,824	142,138	51,047	1,942,309	1,483,600
Texas	(1)	(1)	234,380	64,710	1,347,598	1,025,232	988,202	579,790	1,790,952	540,726	5,674,651	2,850,955
Utah			219,035	45,315	53,289	21,936	(1)	(1)	248,893	30,129	659,588	154,793
Vermont			12,500	4,000	3,552	4,044	2,633	1,835	41,900	13,125	131,453	34,795
Virginia			(1)	(1)	481,305	568,726	305,881	294,939	(1)	(1)	1,897,909	1,531,235
Washington			(1)	(1)	753,295	399,533	449,067	214,114	1,227,696	240,158	3,464,557	1,398,506
West Virginia					244,133	257,458	504,036	512,834	67,231	45,803	2,168,045	2,888,833
Wisconsin	6,500	14,000	321	201	960,435	602,915	1,568,459	825,304	600,607	241,116	5,713,956	2,703,475
Wyoming					15,249	20,675	51,006	47,393	501,568	70,490	615,163	173,886
Undistributed [2]	22,604	42,774	2,141,233	415,052	276,272	323,619	241,726	153,040	522,338	181,660	491,948	548,009
Average value	[3] 74,828	[3] 150,239 2.01	[4] 2,820,959	[4] 585,400 0.21	30,486,874	22,718,803 0.75	28,830,336	18,773,832 0.65	21,340,843	6,676,015 0.31	156,230,063	97,013,115 0.62

[1] Included under "Undistributed."
[2] Includes items entered as "(1)."
[3] Includes a small quantity of filter gravel.
[4] Includes 878,597 tons of sand used as railroad ballast, valued at $118,893, and sand used for railroad fills, bank widening, and other purposes.

Sand and gravel sold or used by producers in the United States in 1925, by States and uses

State	Glass sand		Molding sand		Building sand		Paving sand		Grinding and polishing sand		Fire or furnace sand		Engine sand	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama			20,196	$20,177	507,546	$176,184	270,868	$141,075	(1)	(1)	(1)	(1)	(1)	(1)
Arizona					(1)	(1)								
Arkansas	(1)	(1)	(1)	(1)	116,230	82,604	149,300	69,231					(1)	(1)
California	(1)	(1)	35,742	64,717	3,432,386	2,240,043	2,941,322	1,591,028	(1)	(1)	(1)	(1)	(1)	(1)
Colorado			(1)	(1)	154,610	120,747	104,929	80,529					29,934	$19,101
Connecticut			2,431	3,337	316,518	228,158	36,205	19,559	(1)	(1)			(1)	(1)
Delaware			(1)	(1)	19,151	15,965	(1)	(1)					(1)	(1)
District of Columbia					(1)	(1)	(1)	(1)						
Florida					1,079,839	614,812	202,451	109,406					(1)	(1)
Georgia	(1)	(1)	(1)	(1)	427,449	168,816	119,440	73,565			(1)	(1)	21,152	5,492
Hawaii					(1)	(1)								
Idaho					(1)	(1)	13,202	2,805						
Illinois	709,029	$636,355	739,373	601,852	3,429,381	1,539,182	2,732,641	1,277,456	318,129	$678,164	(1)	(1)	171,029	79,613
Indiana	(1)	(1)	643,305	271,184	1,726,489	657,184	1,722,852	825,678	(1)	(1)	71,279	$22,039	302,460	51,429
Iowa			33,418	36,134	636,534	321,190	882,368	245,900	19,324	28,223	(1)	(1)	40,350	24,715
Kansas			(1)	(1)	1,060,997	656,092	651,863	389,221					55,023	32,236
Kentucky	(1)	(1)	38,689	49,242	610,680	552,996	189,317	141,822	(1)	(1)	(1)	(1)	20,526	19,488
Louisiana					406,574	269,058	130,366	62,364					(1)	(1)
Maine					27,805	20,100	1,309	725	3,500	7,000	(1)	(1)	(1)	(1)
Maryland	(1)	(1)			1,747,347	1,264,030	277,586	198,942					(1)	(1)
Massachusetts	(1)	(1)	48,562	54,660	1,304,313	1,207,411	291,428	205,224	9,463	13,654	(1)	(1)	69,105	46,185
Michigan	(1)	(1)	581,113	255,763	1,852,823	844,957	1,426,953	514,878	(1)	(1)			2,496	1,049
Minnesota			10,842	6,611	882,741	547,260	354,418	141,959	(1)	(1)	(1)	(1)	26,121	9,346
Mississippi					129,782	56,823	161,455	76,074					26,075	6,837
Missouri	165,209	252,271	86,680	71,651	1,147,903	806,541	1,136,791	751,287	131,123	108,234	(1)	(1)	23,541	17,397
Montana					26,581	16,472	17,472	7,071					(1)	(1)
Nebraska			(1)	(1)	686,961	244,727	146,046	53,266					28,623	8,548
Nevada					(1)	(1)	(1)	(1)					(1)	(1)
New Hampshire					18,610	19,188	(1)	(1)					(1)	(1)
New Jersey	195,770	310,796	449,578	597,284	1,991,659	920,309	1,086,052	571,152	81,119	213,057	47,145	71,391	24,920	10,816
New Mexico			(1)	(1)	13,265	12,680	(1)	(1)	(1)	(1)			13,823	7,213
New York	(1)	(1)	671,610	1,147,072	7,271,035	3,473,186	2,105,599	1,315,136	9,150	8,500	10,260	8,850	111,557	63,750
North Carolina			(1)	(1)	94,011	34,842	276,434	114,360	(1)	(1)			14,843	5,738
North Dakota					18,607	10,652	(1)	(1)						
Ohio	57,948	114,350	861,085	1,207,840	3,166,732	2,222,020	1,688,264	1,060,466	60,733	227,577	61,018	121,918	78,477	54,620
Oklahoma	(1)	(1)			412,440	241,913	373,080	210,611					53,523	36,311
Oregon					547,245	287,593	277,917	210,161	(1)	(1)			(1)	(1)
Pennsylvania	418,676	845,455	537,536	792,067	4,316,359	3,318,878	2,068,622	1,497,546	722,996	1,016,954	69,559	100,132	328,729	418,396
Rhode Island			(1)	(1)	4,903	3,469								
South Carolina					92,947	42,451	162,171	69,695	(1)	(1)			(1)	(1)

South Dakota					60,352	38,701	298,963	41,299					(1)	(1)
Tennessee			14,332	11,392	601,751	535,364	254,542	202,401	42,240	39,204	(1)	(1)	39,510	30,041
Texas	(1)	(1)	3,133	3,723	1,001,009	543,185	428,598	219,162					62,631	24,630
Utah					102,882	45,447	(1)	(1)					(1)	(1)
Vermont			(1)	(1)	2,240	1,533	(1)	(1)	(1)	(1)			(1)	(1)
Virginia	61,532	136,523	10,835	13,919	614,354	294,848	291,631	110,548	9,034	4,272	(1)	(1)	139,907	68,950
Washington			(1)	(1)	725,819	363,416	276,774	143,361	(1)	(1)			65,915	25,687
West Virginia	501,688	1,136,942	(1)	(1)	397,735	401,337	368,088	421,365	(1)	(1)	(1)	(1)	179,545	147,370
Wisconsin			102,990	83,587	1,993,212	708,392	507,205	174,042	(1)	(1)	(1)	(1)	53,786	20,107
Wyoming					26,491	28,952	(1)	(1)					(1)	(1)
Undistributed [2]	225,078	403,393	163,978	108,405	84,542	106,755	458,292	318,918	417,638	180,341	84,455	68,602	278,034	160,825
Average value	2,334,921	3,836,085 1.64	4,995,428	5,460,618 1.08	45,287,240	26,306,463 0.58	24,876,814	13,659,228 0.55	1,824,449	2,525,180 1.38	343,716	392,932 1.14	2,261,635	1,395,890 0.62

[1] Included under "Undistributed."

[2] Includes items entered as "(1)."

Sand and gravel sold or used by producers in the United States in 1925, by States and uses—Continued

State	Filter sand		Other sands		Building gravel		Paving gravel		Railroad ballast gravel		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Alabama			(1)	(1)	544,038	$398,507	567,189	$407,848	592,485	$73,610	2,683,042	$1,244,398
Arizona					(1)	(1)			(1)	(1)	(1)	(1)
Arkansas					38,480	42,400	665,799	326,720	1,032,506	474,869	2,059,893	1,078,303
California	(1)	(1)	27,874	$13,640	2,976,236	2,094,357	3,413,673	2,380,615	1,159,771	290,637	14,077,849	8,752,528
Colorado	(1)	(1)	2,716	1,113	159,488	159,430	130,596	115,874	(1)	(1)	692,395	547,944
Connecticut			(1)	(1)	142,744	150,982	(1)	(1)			1,065,132	463,807
Delaware					(1)	(1)					81,052	48,506
District of Columbia					(1)	(1)	(1)	(1)			(1)	(1)
Florida					124,728	294,757	(1)	(1)	23,130	3,600	1,515,529	1,089,215
Georgia					(1)	(1)	(1)	(1)	(1)	(1)	741,020	303,441
Hawaii											(1)	(1)
Idaho					(1)	(1)	35,623	15,169	(1)	(1)	53,180	20,142
Illinois	2,353	$7,391	(1)	(1)	2,236,895	1,152,803	2,532,938	1,246,102	1,367,952	470,089	14,954,536	8,140,090
Indiana			(1)	(1)	1,000,112	589,595	2,734,972	1,945,879	1,812,850	672,732	12,054,740	5,275,743
Iowa	6,249	7,127	(1)	(1)	381,496	342,653	939,102	426,781	307,689	89,207	3,297,785	1,546,900
Kansas			(1)	(1)	87,908	44,909	143,542	143,206	146,758	17,553	2,198,870	1,303,060
Kentucky	(1)	(1)	24,185	14,570	529,246	499,027	377,623	274,763	588,668	186,330	2,402,982	1,770,458
Louisiana			(1)	(1)	379,775	301,333	1,131,421	725,917	706,043	381,660	2,807,761	1,766,452
Maine					32,248	38,217	(1)	(1)	322,452	78,883	407,760	155,014
Maryland					857,535	1,121,856	564,063	719,903	(1)	(1)	3,619,534	3,500,130
Massachusetts	(1)	(1)	(1)	(1)	916,117	1,236,193	609,586	277,682	84,492	17,271	3,349,091	3,116,323
Michigan			(1)	(1)	2,886,661	1,907,582	2,637,270	1,635,362	757,911	238,423	10,878,375	5,684,474
Minnesota	(1)	(1)	60,983	10,982	666,058	754,281	457,554	386,323	551,519	173,543	3,015,793	2,046,250
Mississippi			41,189	12,781	359,691	301,024	817,651	376,903	995,672	290,267	2,531,515	1,120,709
Missouri			(1)	(1)	975,056	696,957	1,120,160	727,140	711,473	155,843	5,523,605	3,595,187
Montana			(1)	(1)	106,184	55,903	39,652	19,278	772,834	178,450	1,024,983	293,397
Nebraska	(1)	(1)	62,687	30,059	1,265,371	469,305	398,836	186,907	(1)	(1)	2,651,473	1,027,096
Nevada			(1)	(1)	(1)	(1)	(1)	(1)	198,441	47,452	509,998	174,527
New Hampshire					(1)	(1)	(1)	(1)	(1)	(1)	424,330	316,248
New Jersey	(1)	(1)	(1)	(1)	570,325	495,598	388,921	305,713			4,935,934	3,680,064
New Mexico	(1)	(1)			45,895	35,235	(1)	(1)	(1)	(1)	141,013	107,204
New York	13,430	14,143	(1)	(1)	3,736,274	2,777,626	971,234	896,334	56,831	36,650	14,966,616	9,750,433
North Carolina	(1)	(1)	58,176	27,812	180,000	226,978	324,726	336,928	(1)	(1)	1,108,035	886,351
North Dakota					(1)	(1)	(1)	(1)	(1)	(1)	248,084	67,155
Ohio	16,383	47,812	27,878	14,406	2,118,715	1,554,133	1,487,527	1,043,750	1,671,400	685,021	11,296,160	8,353,913
Oklahoma			(1)	(1)	274,348	156,906	396,076	225,343	50,728	21,224	1,626,758	958,657
Oregon			(1)	(1)	685,411	504,889	991,074	834,243	379,220	150,461	2,990,845	1,998,545
Pennsylvania	4,630	6,890	18,414	25,231	2,658,404	2,236,534	1,413,095	1,163,573	47,045	17,132	12,604,065	11,438,788
Rhode Island					(1)	(1)	(1)	(1)			131,535	45,157
South Carolina	(1)	(1)	(1)	(1)			(1)	(1)	(1)	(1)	511,497	227,996
South Dakota	(1)	(1)	(1)	(1)	14,722	14,827	1,141,906	449,677	245,373	26,074	1,769,922	576,248

Tennessee					434,702	394,432	436,009	287,768	(1)	(1)	1,966,730	1,533,251
Texas			(1)	(1)	1,633,273	1,180,513	1,058,356	698,690	1,619,200	734,179	6,093,476	3,478,517
Utah			(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	466,449	189,122
Vermont					3,030	2,326	9,160	8,250	(1)	(1)	192,227	35,608
Virginia			(1)	(1)	498,363	458,503	366,540	319,472	(1)	(1)	2,170,000	1,491,274
Washington			(1)	(1)	813,462	410,473	1,110,922	598,787	1,172,597	213,041	4,197,660	1,763,153
West Virginia					351,753	333,081	509,027	498,362	134,667	87,664	2,475,689	3,083,115
Wisconsin	(1)	(1)	(1)	(1)	1,699,684	794,975	1,559,790	685,811	190,714	57,462	6,181,822	2,603,672
Wyoming					30,158	35,625	16,688	31,725	(1)	(1)	586,450	192,137
Undistributed [2]	63,417	165,778	4,827,455	1,232,194	344,565	324,964	1,076,269	688,874	1,785,109	523,110	718,283	701,421
Average value	106,462	249,141 2.34	[3] 5,151,557	[3] 1,382,788 0.27	32,759,151	24,589,689 0.75	32,574,570	21,411,672 0.66	[4] 19,485,530	[4] 6,392,437 0.33	172,001,473	107,542,123 0.63

[1] Included under "Undistributed."
[2] Includes items entered as "(1)."
[3] Includes 1,269,725 tons of sand, valued at $360,833, used as railroad ballast, and 3,578,046 tons of sand, valued at $716,904, used by the railroads for fills, bank widening, and stock-car bedding.
[4] Includes some gravel used by the railroads for fills and other purposes.

PRICES

The average value per ton of all sand and gravel f. o. b. pit or nearest shipping point, as reported by the producers, was 63 cents in 1925 and 62 cents in 1924. In 1925 the average value of building and filter sands increased as did that of the miscellaneous sands entered in the foregoing tables as "other sands" and composed mainly of sand used by the railroads for ballast and fills. All other classes of sand decreased in average value. The average value of building gravel remained virtually the same as in 1924 and that of paving gravel and of gravel used by the railroads as ballast increased slightly.

Average value per short ton of sand and gravel sold or used by producers in the United States, 1916–1925

[Based on amounts received for sales f. o. b. pits or nearest shipping points]

Kind	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Glass sand	$0.97	$1.38	$1.94	$1.97	$2.19	$1.81	$1.62	$1.84	$1.71	$1.64
Molding sand	.69	.92	1.04	1.10	1.46	1.29	1.17	1.21	1.13	1.08
Building sand	.32	.39	.50	.56	.68	.65	.60	.61	.57	.58
Paving sand	.36	.41	.54	.66	.68	.63	.61	.59	.56	.55
Grinding and polishing sand	.65	1.04	1.60	1.34	1.80	1.61	1.46	1.62	1.54	1.38
Fire or furnace sand	.90	1.15	1.48	1.23	1.81	1.56	1.42	1.45	1.23	1.14
Engine sand	.37	.59	.76	.77	.82	.86	.76	.76	.66	.62
Filter sand	.90	.76	1.47	1.48	1.27	1.11	1.99	1.20	2.01	2.34
Railroad ballast gravel	.13	.17	.22	.30	.32	.33	.36	.29	.31	.33
Gravel (exclusive of railroad ballast)	.32	.46	.57	.66	.81	.75	.72	.72	.70	.70
All sand and gravel	.33	.46	.61	.65	.80	.71	.68	.65	.62	.63

GLASS SAND

In 1925 glass sand increased 8 per cent in quantity and 3 per cent in value as compared with 1924. Illinois, with 709,029 tons, was first in quantity; West Virginia, Pennsylvania, New Jersey, and Missouri followed in the order named. West Virginia, with glass sand valued at $1,136,942, was first in total value. Pennsylvania, Illinois, New Jersey, and Missouri followed in order. The average value of glass sand per ton was $1.64 in 1925 as compared with $1.71 in 1924. Eighteen States reported output of glass sand in 1925. Lists of deposits and names of companies were given in the 1924 and earlier reports of this series.

Glass sand sold or used by producers in the United States, 1916–1925

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1916	2,018,317	$1,957,797	$0.97	1921	1,280,359	$2,314,314	$1.81
1917	1,942,675	2,685,014	1.38	1922	1,768,549	2,866,366	1.62
1918	2,172,887	4,209,728	1.94	1923	2,034,958	3,751,778	1.84
1919	1,827,409	3,593,371	1.97	1924	2,169,899	3,718,973	1.71
1920	2,165,926	4,748,690	2.19	1925	2,334,921	3,836,085	1.64

MOLDING SAND

There was an increase of 13 per cent in the total quantity of molding sand sold or used by producers and of 8 per cent in the total value. The average value per ton, however, was lower in 1925 than in 1924—$1.08 as compared with $1.13. In quantity of production the leading States in order were Ohio, Illinois, New York, Indiana, Michigan, Pennsylvania, and New Jersey, each producing over 400,000 tons. Ohio led in shipments with 861,085 tons. Ohio led also in the total value of molding sand, its output being valued at $1,207,840; New York, Pennsylvania, Illinois, New Jersey, Indiana, and Michigan followed in order. Thirty-one States reported production of molding sand.

Molding sand sold or used by producers in the United States, 1916–1925

Year	Short tons	Value		Year	Short tons	Value	
		Total	Average			Total	Average
1916	4,662,649	$3,219,839	$0.69	1921	1,906,977	$2,451,966	$1.29
1917	4,660,968	4,303,809	.92	1922	3,839,116	4,478,405	1.17
1918	4,910,178	5,121,865	1.04	1923	5,559,644	6,730,417	1.21
1919	3,774,612	4,153,990	1.10	1924	4,403,893	4,995,268	1.13
1920	5,128,075	7,504,759	1.46	1925	4,995,428	5,400,618	1.08

PRODUCERS OF MOLDING SAND

Producers who have reported output of molding sand in recent years, though not all have reported continuously, are as follows:

Alabama:
- Jefferson County—Trussville, J. M. Acton.
- St. Clair County—Cooks Springs, Carreker Bros. Sand Co.; D. W. Moody; H. E. Riggan; and L. E. Shurbet.

Arkansas: Izard County—Guion, Silica Products Co.

California:
- Monterey County—
  - Lake Mayella, Del Monte Properties Co. (address, 401 Crocker Building, San Francisco).
  - Prattco, Pratt Building Materials Co. (address, 518 Hearst Building, San Francisco).
- Sacramento County—Sacramento, Cannon & Co. (P. O. Box 281).
- San Diego County—San Diego, Forrest L. Hieatt (address, P. O. Box 865); and Robert M. Hubbard (address, 406 West Nutmeg Street).
- Ventura County—Ventura, Chas. A. Cole (address, 1723 Church Street).

Colorado:
- El Paso County—Colorado Springs, The Earth Products Co.
- La Plata County—Durango, F. B. Wilken.
- Pueblo County—Pueblo, Pueblo Sand, Gravel & Construction Co.

Connecticut:
- Hartford County—
  - Farmington, Sherman Sand Co. (address, rear 612 West Main Street, New Britain).
  - New Britain, John J. McCabe & Co.
- Litchfield County—Torrington, F. W. Fuller.
- New Haven County—Waterbury, Waterbury Sand & Gravel Co. (address, 1898 Baldwin Street).

Delaware:
- New Castle County—
  - Hockessin, Magna Sand Corporation, (Ltd.).
  - Newport, Kiamensi Clay Co. (address, Wilmington).
- Sussex County—Lewes, Lewes Sand Co.

Georgia:
- Talbot County—
  - Howard (near), Central of Georgia Sand Co.
  - Junction City, Kirkpatrick Sand & Cement Co. (address, Woodward Building, Birmingham, Ala.); and J. R. Hime Sand Co., now Southern Sand Co.
- Taylor County—Howard, Central of Georgia Sand Co.
- Whitfield County—Dalton, Smith Sand Co.

Illinois:
- Bond County—
  - Greenville, Wm. Peterson & Sons; Ed. E. Squier Co. (address, Federal Reserve Bank Building, St. Louis, Mo.); and Eugene Stultz (address, Mulberry Grove).
  - Mulberry Grove, Chas. D. Lutz; and Warren Sand Co. (address, Chamber of Commerce Building, Chicago).
  - Tamalco, Gustav Nicol (address, 817 West Clay Street, Collinsville).
- Bureau County—
  - Tiskilwa, F. G. Boyden (address, Sheffield).
  - Wyanet, Golding & Larsen.
- Cass County—Arenzville, Gustav Nicol (address, 817 West Clay Street, Collinsville).
- Fayette County—
  - Bluff City, Eugene Stultz (address, Mulberry Grove).
  - Vera, McKinny Bros. (address, Vandalia).
- Henderson County—
  - Dallas City, Purity Moulding Sand Co.
  - Gladstone, Gladstone Sand Co.
- Jo Daviess County—Aiken, F. Einsweiler & Sons (address, Galena).
- Kane County—
  - Aurora, Peter Hettinger (address, North Aurora).
  - Carpentersville, Emery T. Moore (address, St. Charles).
  - North Aurora, Jno. Mettel, Jr.
  - South Elgin, J. G. Van Wicklin (address, Elgin).
- Kendall County—Millington, Ballou White Sand Co.
- La Salle County—
  - Ottawa, Benson Brothers; Benson-Richards Sand Co.; Commonwealth Silica Co.; The Higby Canyon Sand Co. (address, Station G, Columbus, Ohio); Illinois Valley Silica Co.; Ottawa Silica Co.; Ottawa Silica Moulding Sand Co.; South Ottawa Silica Co.; Standard Silica Co.; and United States Silica Co. (address, 122 South Michigan Avenue, Chicago).
  - Utica, American Silica Sand Co.; John L. Neary (Federal Silica Mines); E. J. Reynolds Sand Co.; and Utica Fire Sand Co. (address, 503 Central Life Building, Ottawa).
  - Wedron, Wedron Silica Co. (address, First National Bank Building, Chicago); and C. W. Wilkinson Sand Co. (address, 511 Maloney Building, Ottawa).
- Lee County—Elwood, Rockton Moulding Sand Co. (address, Rockton).
- McHenry County—
  - Algonquin, Henry F. Diereks.
  - Chicago (near), Garden City Sand Co. (address, Chamber of Commerce Building, Chicago).
- Madison County—
  - Collinsville, Commercial Foundry Sand Co. (address, 220 North Clay Street).
  - East Alton, Ed. E. Squier Co. (address, Federal Reserve Bank Building, St. Louis, Mo.).
- Rock Island County—Rock Island, T. B. & S. S. Davis (address, 114 Seventeenth Street).
- Will County—
  - Joliet, Illinois Molding Sand & Materials Co. (address, 201 Union Street).
  - Ritchey, Larsen & Larsen Sand Co.; and River Grove Sand Co. (address, Custer Park).
- Winnebago County—Rockton, Guetschow Brothers Sand Co. (address, R. D. No. 1, Box 2, Beloit, Wis.); and Rockton Moulding Sand Co.

Indiana:
Cass County—Lake Cicott, A. B. Hardy; and Million Bros.
Clark County—
Jeffersonville, Newport Sand Bank Co. (address, 502 Monmouth Building, Newport, Ky.).
New Albany, Jno. W. Taylor (address, R. D. No. 2, Jeffersonville).
Lagrange County—Wolcottville, Northern Indiana Gravel Co.
Lake County—Gary, Construction Materials Co. (address, 133 West Washington Street, Chicago, Ill.).
La Porte County—Michigan City, Jno. N. Bos Sand Co. (address, 118 N. La Salle Street, Chicago, Ill.); Hoosier Slide Sand Co.; National Sand Co. (address, 610 Otis Building, Chicago, Ill.); Ohlemacher Brick Co.; Pinkston Sand Co.; and Adolph Van Spanje.
Marion County—Indianapolis, J. A. Hagerty (address, 1667 Union Street).
Morgan County—Centerton, Bradford Bros.
Perry County —Troy, Houghland & Hardy (address, Evansville); and Newport Sand Bank Co. (address, 502 Monmouth Building, Newport, Ky.).
Porter County—
Chesterton, Consumers Co. (address, 111 West Washington Boulevard, Chicago, Ill.).
Valparaiso, Garden City Sand Co. (address, Chamber of Commerce Building, Chicago, Ill.).
Spencer County—Rockport, C. P. Abney; Garden City Sand Co. (address, Chamber of Commerce Building, Chicago, Ill.); Houghland & Hardy (address, Evansville); and Newport Sand Bank Co. (address, 502 Monmouth Building, Newport, Ky.).
Starke County—North Judson, C. W. Weninger.
Vanderburg County—Evansville, Houghland & Hardy.
Vigo County—Terre Haute, Houghland & Hardy (address, Evansville).
Iowa:
Blackhawk County—Waterloo, Iowa Foundry Sand Co.
Clayton County—Clayton, Clayton White Sand Co.; and Langworthy Silica Co. (address, 902 Federal Bank Building, Dubuque).
Polk County—Des Moines, N. Leon Harris (address, R. R. No. 4, Lock Box 507).
Wapello County—Ottumwa, Ottumwa Sand Co.
Kansas:
Allen County—Iola, Thogmartin & Gardiner.
Wyandotte County—Kansas City (Kaw River Plants), Stewart Sand Co. (address, 615 American Bank Building, Kansas City, Mo.).
Kentucky:
Campbell County—Newport, Newport Sand Bank Co. (address, 502 Monmouth Building).
Carter County—Lawton, Lawton Silica Sand Co.
Hardin County—Tip Top, Kentucky Silica Co. (address, Fourteenth and Gallagher Streets, Louisville).
Jefferson County—
Louisville, Breslin Sand Co. (address, Twenty-sixth and Crops Streets).
Pleasure Ridge Park, W. H. Cloud Molding Sand Co. (address, 307 Keller Building, Louisville).
Richland Stop, W. H. Thompson (address, Valley Station).
Kenton County—Covington, A. W. Moore (address, 3309 Eastside Avenue, Cincinnati, Ohio); and Chas. G. Sperl (address, R. D. No. 133 Covington).
Mason County—Maysville, Augusta Sand Bank Co.
Maryland:
Calvert County—Upper Marlboro, Plum Point Moulding Sand Co. (address, Plum Point).
Washington County—Hancock, Maryland Glass Sand Co. (address, Hagerstown).
Massachusetts:
Barnstable County—Provincetown, Whitehead Bros. Co. (address, 537 West 27th Street, New York, N. Y.).
Berkshire County—Cheshire, Cheshire White Quartz Sand Co.
Essex County—Newburyport, Boston Sand & Gravel Co. (address, 88 Broad Street, Boston).
Hampden County—Westfield, Benj. H. Ellis; and Jno. F. Porter & Sons.

Massachusetts—Continued.
Middlesex County—Tewksbury, Sherman-Moore Co. (address, Box 386 Lowell).
Plymouth County—East Bridgewater, East Bridgewater Factory Corporation.
Worcester County—Worcester, Streeter & Sons (address, 1 Glenwood Street).
Michigan:
Berrien County—
Coloma, Garden City Sand Co. (address, Chamber of Commerce Building, Chicago, Ill.).
Riverside, Kerlikowske Bros. (address, St. Joseph).
Huron County—Port Austin, Port Crescent Sand & Fuel Co. (address, Detroit).
Ingham County—Lansing, F. M. Stockman, now River Forest Development Co.
Manistee County—Manistee, Hubell Sand Co.
Mason County—Indington, Hubell Sand Co. (address, Manistee).
Oakland County—Rochester, Rochester Sand & Brick Co. (address, 400 Penobscot Building, Detroit).
Saginaw County—Swan Creek, Saginaw Brick Co. (address, Saginaw).
St. Clair County—
Abbotsford, Auto City Brick & Sand Co. (address, Port Huron).
Marine City, Michigan Moulding Sand Co. (address, 1928 Seventh Street, Port Huron).
Marysville, Reynolds & Bailey.
Tuscola County—
Juniata, Great Lakes Foundry Sand Co. (address, 1368 Penobscot Building, Detroit).
Vassar, Burt Core Sand Co. (address, 642 Beaubien Street, Detroit).
Wayne County—Rockwood, Michigan Silica Co.
Minnesota:
Cook County—Duluth (near), Barnett & Record Co. (address, 418 Lyceum Building).
Goodhue County—Red Wing, Charles Brown (address, 436 Third street); and Red Wing Filter Sand Co.
Le Sueur County—Ottawa, Case & Roche; and Ottawa Sand & Clay Co.
Mower County—Austin, Albert Groh (address, 1112 West Bridge Street).
Pine County—Kerrick, Lewis Hultgren.
Ramsey County—St. Paul, Richard Langan (address, 2108 Sargent Avenue); and L. C. Lorin (address, 390 West Central Avenue).
Rice County—Faribault, John Liverseed.
Rock County—Luverne, M. E. Ford.
Scott County—Jordan, Jordan Sand Co.
Missouri:
Franklin County—Pacific, W. W. Goran; Macks Creek Sand & Clay Co.; Tavern Rock Sand Co. (address, 616 North Second Street, St. Louis); and D. E. Williams Sand Co.
Jackson County—Kansas City, Stewart Sand Co. (address, 615 American Bank Building).
Jefferson County—Festus, American Silica Sand & Mining Co.; Missouri Silica Mining & Manufacturing Co. (address, 237 Frisco Building, St. Louis); and Silica White Sand Co.
St. Charles County—Klondyke, Tavern Rock Sand Co. (address, 616 North Second Street, St. Louis).
St. Louis City—Carondelet, John W. Allen & Son (address, 4824 South Broadway, St. Louis).
Nebraska:
Jefferson County—Endicott, Fairchild Bros.
New Jersey:
Atlantic County—
Folsom, Charles E. Pettinos (address, 25 Church Street, New York, N. Y.).
Hammonton, William Brumfield (address, Waterford Works).
Mays Landing, Daniel Goff Co. (address, 1703 Spring Garden Street, Philadelphia, Pa.).
Newtonville, Charles E. Pettinos (address, 25 Church Street, New York, N. Y.).
Richland, George F. Pettinos (address, 1206 Locust Street, Philadelphia, Pa.).

New Jersey—Continued.
Atlantic County—Continued.
Tuckahoe, Young Sand & Gravel Co. (address, Ocean City).
Winslow, M. R. Taggart & Co. (address, 854 North Third Street, Philadelphia, Pa.).
Bergen County—Hackensack, Chas. Trensch (address, Box 27, North Hackensack).
Burlington County—
Birmingham, Norcross & Edmunds (address, 513 Crozer Building, 1420 Chestnut Street, Philadelphia, Pa.).
Ewansville, Charles E. Pettinos (address, 25 Church Street, New York, N. Y.).
Hainesport, Henry D. Culin (address, Mount Holly); and Charles E. Pettinos (address, 25 Church Street, New York, N. Y.).
Lumberton, Brennan Sand Co. (address, Tullytown, Pa.).
Masonville, J. W. Paxson Co. (address, Nicetown Avenue and D Street, Philadelphia, Pa.); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
Mount Holly, George F. Pettinos (address, 1206 Locust Street, Philadelphia, Pa.); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
South Pemberton, Norcross & Edmunds (address, 513 Crozer Building, 1420 Chestnut Street, Philadelphia, Pa.).
Camden County—
Albion, George F. Pettinos (address, 1206 Locust Street, Philadelphia, Pa.).
Blackwood, Canalicchio Bros. (address, Box 52, Mount Ephraim).
Blenheim, Cumming Bros. (address, Blackwood).
Delair, Robert R. Erato (address, Franklin and Atlantic Avenues, Margate City).
Hayville, M. R. Taggart & Co. (address, 854 North Third Street, Philadelphia, Pa.).
Penryn, Reading Sand Co. (address, Bridgeton).
Cape May County—
Belleplain and Burleigh, Daniel Goff Co. (address, 1703 Spring Garden Street, Philadelphia, Pa.).
Cape May, Cape May Sand Co. (address, 512 Washington Street).
Dennisville, Young Sand & Gravel Co. (address, Ocean City).
Sea Isle Junction, J. B. Drinker & Co. (address, 910 Liberty Building, Philadelphia, Pa.).
Cumberland County—
Belleplain (near), Charles E. Pettinos (address, 25 Church Street, New York, N. Y.).
Cedarville, Crystal Sand Co. (address, Cumberland Trust Building, Bridgeton); and George F. Pettinos (address, 1206 Locust Street, Philadelphia, Pa.).
Clayville, Daniel Goff Co. (address, 1703 Spring Garden Street, Philadelphia, Pa.).
Dividing Creek, Charles E. Pettinos (address, 25 Church Street, New York, N. Y.); and South Jersey Sand Co.
Dorchester, Charles E. Pettinos (address, 25 Church Street, New York, N. Y.).
Manumuskin, J. B. Drinker & Co. (address, 910 Liberty Building, Philadelphia, Pa.).
Millville, Crystal Sand Co. (address, Cumberland Trust Building, Bridgeton); Daniel Goff Co. (address, 1703 Spring Garden Street, Philadelphia, Pa.); Menantico Sand & Gravel Co.; J. W. Paxson Co. (address, Nicetown Avenue and D Street, Philadelphia, Pa.); George F. Pettinos (address, 1206 Locust Street, Philadelphia, Pa.); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
South Vineland, Crystal Sand Co. (address, Cumberland Trust Building, Bridgeton); and J. B. Drinker & Co. (address, 910 Liberty Building, Philadelphia, Pa.).
Gloucester County—
Downer, S. W. Downer.
Radix, George F. Pettinos (address, 1206 Locust Street, Philadelphia, Pa.).

New Jersey—Continued.
Middlesex County—
Messlers, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
Milltown, Marcus S. Wright (address, South River).
Old Bridge, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
Perth Amboy, L. H. McHose (Inc.).
Sayreville, Crossman Co. (address, South Amboy); and Sayre & Fisher Land Co.
South Amboy, F. A. Hillman; Such Clay Co. (address, Box 345, Perth Amboy); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
South River, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.); and Marcus S. Wright.
Monmouth County—Lakewood, George F. Hillman.
Morris County—
Flanders, Acme Silica Co.
Stanhope, Hodgson Sand & Gravel Co. (P. O. Box 67).
Warren County—Delaware, Delaware Sand Co. (address, Belvidere).
New Mexico:
Bernalillo County—Albuquerque, Springer Transfer Co.
New York:
Albany County—
Albany, The Moulding Sand Co. (address, 86 State Street); New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn); Edward J. Smith (address, 170 Second Avenue); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Clermont, Albany Sand & Supply Co. (address, Box 28, Albany).
Delmar, Albany Sand & Supply Co. (address, Box 28, Albany); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Glenmont, New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Selkirk, Chas. Gibbons & Sons (address, Stuyvesant); New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn); J. W. Paxson Co. (address, Nicetown Avenue and D Street, Philadelphia, Pa.); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Slingerlands, Albany Sand & Supply Co. (address, Box 28, Albany); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Wemple, Albany Sand & Supply Co. (address, Box 28, Albany); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
West Albany, Thos. F. Evers (address, Waterford); West Albany Moulding Sand Co. (address, 1050 Madison Avenue); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Cattaraugus County—
Allegany, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Olean, American Radiator Co. (address, 1807 Elmwood Avenue, Buffalo); and C. C. Hatch (address, 62 Inson Street, Buffalo).
Cayuga County—Auburn, J. W. Robinson (address, R. D. No. 7).
Chautauqua County—Kennedy, Buckeye Sand Co. (address, Conneaut, Ohio).
Columbia County—Stuyvesant, Chas. Gibbons & Sons; and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Dutchess County—
Camelot, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
New Hamburg, New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).

New York—Continued.
Greene County—
Coxsackie, New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Hotaling, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
————, Albany Sand & Supply Co. (address, Box 28, Albany).
Kings County—Jamaica Bay, Atlantic Coast Sand Co. (address, 24 Stone Street, New York); and Jacobus Grauwiller Co. (address, 24 Stone Street, New York).
Monroe County—Rochester, Lake Ontario Sand Co. (address, Charlotte).
Nassau County—Farmingdale, Willard Sand & Gravel Co.
Oneida County—
Boonville, Boonville Sand Corporation (address, 404 Court Street, Utica).
Forestport, Boonville Sand Corporation (address, 404 Court Street, Utica); and Pierce, Butler & Pierce Manufacturing Corporation (address, Eastwood).
Orange County—Otisville, Otisville Sand & Gravel Co. (address, Merchants Bank Building, Middletown).
Oswego County—Cleveland, Oneida Lake Sand Co.
Queens County—
Rockaway, Rockaway White Sand Co. (address, 160 Fifth Avenue, New York).
Rockaway Beach, Astell White Sand Co. (address, 90 West Broadway, New York).
Rensselaer County—
Reynolds, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Van Hosen, New York Sand & Facing Co. (address, 106 Grand Avenue, Brookyln); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
St. Lawrence County—Corinth, Corinth Sand Co.
Saratoga County—
Bemis Heights, Charles E. Pettinos (address, 25 Church Street, New York).
Burgoyne, Charles E. Pettinos (address, 25 Church Street, New York).
Cohoes (near), Peter Holohan (address, R. D. No. 1, Waterford).
Cramers, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Crescent, Charles E. Pettinos (address, 25 Church Street, New York).
Elnora, Thos. F. Evers (address, Waterford); J. W. Paxson Co. (address, Nicetown Avenue and D Street, Philadelphia, Pa.); Charles E. Pettinos (address, 25 Church Street, New York); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Jonesville, Hynes Bros. (address, P. O. Box 1018, Mechanicsville); and Avery Jewett.
Mechanicsville, Hynes Bros. (address, P. O. Box 1018); and Charles E. Pettinos (address, 25 Church Street, New York).
Round Lake, New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn).
Schuylerville, Charles E. Pettinos (address, 25 Church Street, New York).
Stafford Bridge, New York Sand & Facing Co. (address, 106 Grand Avenue, Brooklyn).
Ushers, Albany Sand & Supply Co. (address, Box 28, Albany); Hynes Bros. (address, P. O. Box 1018, Mechanicsville); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Vischers Ferry, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Schenectady County—
Niskayuna, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).
Schenectady, A. C. Ford (address, 1095 Brierwood Boulevard); and Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York).

New York—Continued.
Schenectady County—Continued.
South Schenectady, Thos. F. Evers (address, Waterford); and Hynes Bros. (address, P. O. Box 1018, Mechanicsville).
————, Albany Sand & Supply Co. (address, Box 28, Albany).
Tioga County—Nichols, Scranton Sand Co. (address, Waverly).
Ulster County—
Connelly, Robert Main & Co.
Kingston, Chas. E. Pettinos (address, 25 Church Street, New York).
Marlboro, New York Sand & Facing Co. (address, 10¢ Grand Avenue, Brooklyn).
Wayne County—Sodus Point, Sodus Bay Sand Co.
North Carolina:
Scotland County—Green Pond, Gale Sand Co. (address, Gibson).
Ohio:
Ashtabula County—Conneaut, Buckeye Sand Co.; Peerless Sand Co.; Union Sand Co.; and Walker Sand Co. (address, West Springfield, Pa.).
Butler County—
Hamilton, Geo. A. Hornung.
Overpeck, Hamilton Moulding Sand Co. (address, Hamilton).
Columbiana County—Leetonia, Emmet E. Morgan.
Coshocton County—Layland, E. F. Meyer; and Strasburg Sand Co. (address, Strasburg).
Cuyahoga County—Cleveland (near), Greeley-Donahue Sand Co., now the Builders Sand Co. (address, Stop 5, A. B. C. Line, Bedford).
Erie County—
Avery, I. W. Hoover.
Huron, J. K. Boehm.
Milan, The G. F. Burton Co. (address, Springfield); Charles Goodsite; John O'Mara; Homer Parker; and Superior Sand Co. (address, 511 Guardian Building, Cleveland).
Sandusky, Homegardner Sand Co.; Keener Sand & Clay Co. (address, 514 Hartman Building, Columbus); Kelley Island Lime & Transport Co.; and W. S. Taylor.
Gallia County—
Bidwell, Wm. E. Glassburn.
Gallipolis, Hercules Sand Co.; Keener Sand & Clay Co, (address, 514 Hartman Building, Columbus); Anderson Robinson; and Superior Sand Co. (address, 511 Guardian Building, Cleveland).
Hamilton County—Delhi, Garden City Sand Co. (address, Chamber of Commerce Building, Chicago, Ill.); and Newport Sand Bank Co. (address, Newport, Ky.).
Huron County—Norwalk, H. J. Mason (address, Avery); and Superior Sand Co., (address 511 Guardian Building, Cleveland).
Jackson County—Coalton, Jackson Sand Mining Co. (address, Jackson).
Lucas County—Toledo, Mulinix Bros. (address, 908 Harding Drive).
Mahoning County—Austintown, National Sand & Stone Co. (address, Niles).
Muskingum County—
Dresden, Dresden Sand Co. (address, R. D. No. 1); and Howell Sand Co. (address, Zanesville).
Zanesville, Ayers Mineral Co.; and Zanesville Sand Co. (address, 35–36 Times Recorder Building).
Perry County—
Chalfants, Central Silica Co. (address, 320 Masonic Building, Zanesville); and Superior Sand Co. (address, 511 Guardian Building, Cleveland).
New Lexington, Jones Sand Co. (address, Ontario Building, Columbus); Lancaster Coal & Sand Co. (address, Lancaster); New Lexington Sand Co.; and Superior Sand Co. (address, 511 Guardian Building, Cleveland).
Wilbren, Ayers Mineral Co. (address, Zanesville).
Portage County—Geauga (near), Geauga Silica Sand Co. (address, 1409 Schofield Building, Cleveland); and Portage Silica Co. (address, Stambaugh Building, Youngstown).

Ohio—Continued.
Stark County—
Beach City, Beach City Silica Sand Co.
Massillon, The Everhard Co.; Newman Silica Sand Co.; and Superior Sand Co. (address, 511 Guardian Building, Cleveland).
Strasburg, White Rock Silica Sand Co. (address, Massillon), now Dover Fire Brick Co.
Summit County—
Akron, The Columbia Silica Co. (address, Box 348).
Bedford, Silica Products Co. (address, 4500 Euclid Avenue, Cleveland).
Botzum, Superior Sand Co. (address, 511 Guardian Building, Cleveland).
Trumbull County—Brookfield Township, Ralph A. Woods Sand Co. (address, Sharon, Pa.).
Tuscarawas County—
Barrs Mills, Massillon Sand & Stone Co. (address, Massillon).
Dundee, Ayers Mineral Co. (address, Zanesville); and the Coxey Silica Sand Co. (address, Massillon).
New Cumberland, Peerless Sand Co. (address, Conneaut); and Superior Sand Co. (address, 511 Guardian Building, Cleveland).
Somerdale, Tuscora Sand & Coal Co. (address, 912 Fifteenth Street, NW., Canton).
Wayne County—Warwick, Oliver Silica Sand Co. (address, Massillon).
Pennsylvania:
Allegheny County—
Cheswick, The Jas. Jiles Co. (address, Stayton and Highwood Streets, North Side, Pittsburgh); Edw. Murray Sand Co. (address, New Kensington); and Rodgers Sand Co. (address, corner Wood and Water Streets, Pittsburgh).
Creighton, Pittsburgh Plate Glass Co. (address, Frick Building, Pittsburgh).
Pittsburgh, Iron City Sand & Gravel Co. (address, 801 Bessemer Building).
Berks County—
Five Locks, Schuykill Valley Sand Co. (address, 736 North Sixth Street, Reading).
Temple, Temple Silica Sand Co. (address, 511 Penn Street, Reading).
Bucks County—Tullytown, Brennan Sand Co.
Cambria County—Flinton, J. H. Mobus (address, 910 Twenty-fourth Avenue, Altoona).
Carbon County—Lehighton, Lewis F. Kemmerer (address, R. D. No. 5); and Louis Kemp (address, 37 South West Street, Allentown).
Center County—Howard, W. S. Carson Sand Co.
Chester County—Honey Brook, J. C. Budding Co. (address, Lancaster).
Clearfield County—Falls Creek (near), Falls Creek Sand & Stone Co.
Columbia County—
Catawissa, Thos. Elmes (address, R. D. No. 5); C. J. Fisher; and Chas. E. Pettinos (address, 25 Church Street, New York, N. Y.).
Lime Ridge—W. W. Gulick Sand Co. (address, Danville).
Crawford County—
Atlantic, Superior Sand Co. (address, 511 Guardian Building, Cleveland, Ohio).
Meadville, Karl A. Miller.
Dauphin County—Harrisburg, Herman Harm (address, 133 North Thirteenth Street).
Elk County—
Daguscahonda, Silicon Products Co. (address, Ridgway National Bank Building, Ridgway).
Garovi, Ridgway Croyland Silica Sand Co. (address, 153 North Broad Street, Ridgway).
Ridgway, C. M. Fox Sand Co. (address, 824 Marine Trust Building, Buffalo, N. Y.).
Erie County—
Erie, Erie Sand & Gravel Co.
Girard, Buckeye Sand Co. (address, Conneaut, Ohio); and Peerless Sand Co. (address, Conneaut, Ohio).
West Springfield, Union Sand Co. (address, Conneaut, Ohio); and Walker Sand Co.

Pennsylvania—Continued.
Fayette County—
Dunbar, Dunbar Corporation.
Perryopolis, J. K. McIntire (Guiler-Kendall Sand Co.).
Franklin County—
Blackgap, W. L. Craig (address, Scotland).
Pond Bank, Mont Alto Sand Co. (address, Waynesboro).
Huntingdon County—Mapleton Depot, Pennsylvania Glass Sand Co. (address, Lewistown); and Pittsburgh White Sand Co.
Lancaster County—Lancaster, Jacob Getz.
Lawrence County—New Castle, Nathaniel Nesbit; and New Castle Moulding Sand Co. (address, 1211 Albert Street).
Lebanon County—Jonestown, Keystone Sand Products Co. (address, Second and Canal Streets, Lebanon).
Lehigh County—
Allentown, F. G. Miller.
Emaus, Emaus Sand Co.
Lycoming County—
Montoursville, Lycoming Silica Sand Co.
Williamsport, D. N. Thomas Sand & Gravel Co.
Mercer County—
Greenville, Greenville Silica Products Co.
Leesburg, Leesburg Silica Sand Co. (address, P. O. Box 482, New Castle); Mercer Silica Sand Co. (address, 524 Fourth Avenue, Pittsburgh); and Youngstown Silica Sand & Sand Products Co. (address, 909 Home Savings Bank, Youngstown, Ohio).
Pulaski, West Middlesex Sand Co. (address, West Middlesex).
West Middlesex, Ralph A. Wood Sand Co. (address, Sharon).
Mifflin County—
Burnham, J. H. Miller (address, Lewistown).
McVeytown, Mifflin Sand Co. (address, Lewistown).
Vineyard, Pennsylvania Glass Sand Co. (address, Lewistown).
Montour County—Danville, W. W. Gulick Sand Co.
Northumberland County—
Milton, W. W. Gulick Sand Co. (address, Danville).
Northumberland, H. J. Stannert Sand Co.
Venango County—
Emlenton, Richland Sand Products Co. (address, 316 Penn Avenue., Pittsburgh).
Franklin, Geo. H. Jones Sand Co. (Inc.); and Venango Sand Co.
Oil City, Geo. A. Ready.
Polk, Dick Sand Co. (address, Franklin).
Warren County—
Torpedo, Ross Hill Silica Co. (address, 1036 Granite Building, Rochester, N. Y.).
Warren, Warren Sand Co. (address, R. D. No. 3).
Westmoreland County—Derry, Derry Glass Sand Co. (address, Latrobe).
York County—Weigelstown, E. C. Fickes (address, R. D. No. 2, Dover).
Rhode Island:
Providence County—
Bellefonte, Whitehead Bros. Co. (address, 537 West Twenty-seventh Street, New York, N. Y.).
Providence, Timothy A. Sampson (address, 315 California Avenue).
Tennessee:
Benton County—Lipe, C. F. Nunnelly Co. (address, Hollow Rock).
Franklin County—Estill Springs, Estill Sand & Gravel Co.
Hardeman County—Saulsbury, E. T. Durden Sand Co.
Knox County—
Knoxville, Oliver King Sand & Lime Co. (address, Box 606).
Mount Olive, Wm. L. Berry & Sons (address, R. D. No. 3, Knoxville).
Morgan County—Oakdale, Crescent Sand Co. (address, Harriman).
Roane County—Harriman Junction, Daniels Sand Co. (address, Harriman).
Texas:
Atascosa County—Tarbutton, Julius E. Espey (address, Route D, Box 540, San Antonio).
Dallas County—Dallas, Cooper-Storey Co. (address, 415 Praetorean Building); and C. W. Roberts (address, Station A, Route No. 8, Box 717).

Texas—Continued.
Jefferson County—Beaumont, C. A. McKinley & Sons.
Liberty County—Liberty, Texas Builders Supply Co. (address, Beaumont).
Vermont:
Rutland County—Rutland, N. M. Burr (address, South Main Street); and C. H. Webster.
Windsor County—Springfield, Vermont Snath Co.
Virginia:
Caroline County—Bowling Green, Martin & Davis.
Charles City County—
Providence Forge, A. L. Cavedo & Co. (address, 2213 West Grace Street, Richmond).
Richmond (near), Mrs. H. C. Curlis (address, Holdcroft).
Chesterfield County—Chester, A. L. Cavedo & Co. (address, 2213 West Grace Street, Richmond).
Dinwiddie County—Petersburg, Perkinson & Finn (Inc.) (address, P. O. Box 155).
Henrico County—Richmond, A. L. Cavedo & Co. (address, 2213 West Grace Street); Highland Park Sand & Gravel Co.; and J. H. Steigleder & Son (address, 3204 West Franklin Street).
Prince George County—Petersburg (near), Appomattox Iron Works & Supply Co.
Princess Anne County—Cape Henry, J. C. Jones Sand Co. (address, corner Park and Claiborne Avenue, Norfolk).
Rockingham County—Silex, Mrs. Amanda Monger (address, Elkton).
Scott County—Cassard, Pennsylvania Glass Sand Co. (address, Lewistown, Pa.).
Washington:
King County—Cedar Mountain, Western Foundry Sand Co. (address, 1140 Elliott Avenue, Seattle).
Kittitas County—Ellensburg, Western Foundry Sand Co. (address, 1140 Elliott Avenue, Seattle).
Pierce County—Steilacoom and Tacoma, Pioneer Sand & Gravel Co. (address, 808 Leary Building, Seattle).
Whatcom County—Bellingham, Lind Gravel Co. (address, 1525 Forest Street).
West Virginia:
Morgan County—Brosius, Pennsylvania Glass Sand Co. (address, Lewistown, Pa.).
Wisconsin:
Columbia County—
Kilbourn, Walsh Sand & Gravel Co. (address, R. D. No. 19, Burlington).
Portage, Pacific Sand Co.
Dunn County—Menomonie, Excelsior Brick Co.
Eau Claire County—Eau Claire, David Candell (address, 610 Ferry Street).
Fond du Lac County—Ripon, Miss Lillie Lueck.
Green Lake County—
Berlin, H. G. Baehr & Sons (address, R. D. No. 4); Nathan Kintz & Co. (address, R. D. No. 4); W. Michaels Sand Co.; John E. Mix Sand Co.; Wheeler Mix; White & Traugett Co.; Samuel Wilcox & Co.; and C. A. Zamzow & Son.
Utley, Chas. W. Kuehn (address, Fairwater).
Kenosha County—
Bassett, Benj. Elverman.
Wheatland, Garden City Sand Co. (address, Chamber of Commerce Building, Chicago, Ill.).
La Crosse County—La Crosse, Ebner Sand Co. (address, 607 Farnam Street).
Pierce County—Bay City, Bay City Sand Co.
Racine County—Kansasville, Walsh Sand & Gravel Co. (address, Burlington).
Rock County—
Beloit, Guetschow Bros. Sand Co. (address, R. D. No. 1, Box 2); and Northwestern Molding Sand Co. (address, 1700 Emerson Street).
Janesville, Janesville-Wisconsin Moulding Sand Co. (address, 500 West Milwaukee Street).
Sauk County—
Ableman, L. J. Pierson Minerals Co.
Merrimac, Walsh Sand & Gravel Co. (address, Burlington).

IMPORTS AND EXPORTS [1]

The imports of sand and gravel in 1925 amounted to 534,555 short tons, valued at $233,422, as compared with 701,410 tons, valued at $280,206, in 1924 and 477,762 tons, valued at $259,820, in 1923. Canada was the source of nearly 87 per cent and Belgium of nearly 13 per cent; less than half of 1 per cent came from 11 other countries. The Canadian material averaged 38 cents a ton; much of it was brought in as ship ballast. The imports from Belgium averaged 57 cents a ton and the small lots from other countries ranged from an average of 68 cents for Mexican material to $45.32 for that from the United Kingdom. It is understood that some of the high values indicated in the following table represent special molding sands and burnishing sands. The values given for imports are those upon which the import tax in this country is levied, and represent the foreign market value (or the export value, if higher) plus cost of containers and all expenses incident to placing merchandise ready for shipment to the United States, including export tax, if any.

Sand and gravel imported for consumption in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	(1)	$87,144	1921	906,905	$771,734
1917	(1)	142,586	1922	451,943	238,386
1918	(1)	91,465	1923	477,762	259,820
1919	597,481	126,586	1924	701,410	280,206
1920	1,226,684	912,282	1925	534,555	233,422

[1] Quantities not recorded prior to July, 1918. During last six months of 1918 the imports were 284,036 tons, valued at $46,910.

Sand and gravel imported for consumption in the United States, 1923–1925, by classes

Class	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
Glass sand	2,309	$3,008	6,479	$1,961	4,186	$2,262
Other sand	276,493	157,125	246,345	123,099	305,769	141,655
Gravel	198,960	99,687	448,586	155,146	224,600	89,505
	477,762	259,820	701,410	280,206	534,555	233,422

[1] Figures on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

Sand and gravel imported into the United States, 1924–25, by countries

[General imports]

Country	1924		1925	
	Short tons	Value	Short tons	Value
North America:				
Canada	622,970	$221,627	463,930	$174,726
Cuba			193	204
Mexico	541	338	571	390
South America: Brazil			441	7,092
Europe:				
Belgium	76,251	42,890	68,290	38,902
Denmark			84	1,046
France	660	4,457	696	5,427
Germany	36	726	6	116
Italy	17	775	11	20
Netherlands	224	1,199	136	1,070
Norway	1	3		
Sweden	4	15		
United Kingdom	482	3,721	28	1,269
Asia:				
Hongkong	(1)	3		
India (British)	224	4,452	169	3,135
Japan			(1)	25
	701,410	280,206	534,555	233,422

[1] Less than 1 ton.

Sand and gravel exported from the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	(1)	$233,310	1921	(1)	$379,982
1917	(1)	494,251	1922	356,520	400,199
1918	(1)	619,414	1923	551,233	598,633
1919	(1)	382,070	1924	314,140	401,662
1920	(1)	669,945	1925	425,612	496,050

[1] Quantity not recorded prior to 1922.

PUBLICATIONS

The following papers published by the Bureau of Mines define different kinds of sand and give properties and methods of preparation:

Reports of Investigations, Serial 2615, Sand Blast Sand; Serial 2622, Filter Sand for Municipal Water Supply; Serial 2646, Special Sands. The last paper of the three covers engine, abrasive, and fire or furnace sand, special flooring sand, roofing sand (for coating prepared roofing), placing sand (used in the ceramic industry), and stone sawing sand. Applications should be addressed to the Section of Publications, Bureau of Mines, Washington, D. C., and order should give number and title of the paper desired. A limited edition is published for free distribution.

The following technical journals publish much information on the sand and gravel industry:

Cement, Mill and Quarry, 542 Monadnock Block, Chicago, Ill.
Pit and Quarry, Rand McNally Building, Chicago, Ill.
Rock Products, 542 South Dearborn Street, Chicago, Ill.
The National Sand and Gravel Bulletin, official journal of the National Sand and Gravel Association, Munsey Building, Washington, D. C.

SILICA

By Frank J. Katz[1]

INTRODUCTION

Silica (SiO_2) occurs, in deposits of commercial importance, in many different forms, such as vein quartz, as a constituent of pegmatites, as sand, sandstone, quartzite, or flint, as tripoli, and as diatomaceous (infusorial) earth. In some forms, such as rose, smoky, and amethystine quartz, it has value as gems. This chapter deals with silica of all kinds except gem quartz, silica sand or sandstone used for making glass, and silica used in the form of sand, gravel, and crushed material for building, for concrete and mortar, for foundry and furnace work, and for cutting and grinding stone. Such material as is not here included is either gem material or sand, is commercially so designated, and is therefore considered in other chapters of Mineral Resources. Tripoli and diatomaceous earth are to a large extent consumed as abrasives and are considered in the chapter on abrasive materials.

USES

Silica as considered in this chapter is used for many purposes, principally in the manufacture of pottery, paints, and scouring soaps, as a wood filler, as a polisher, and in metallurgical and chemical processes. In the pottery industry, where it is generally called flint, silica is used in the body of the ware to diminish shrinkage and is also used in glazes. Silica for use in pottery should contain less than 0.5 per cent of iron-bearing minerals. Manufacturers of paint use considerable quantities of very finely ground silica, which forms as much as one-third of the total pigment in some paints. For this purpose finely ground crystalline material is superior to fine sand in its natural state because of the angularity of the grains, which makes them adhere more firmly to the article painted and after wear affords a good surface for repainting. The same angularity makes artificially comminuted crystalline quartz superior to natural sand for use in wood fillers. For soaps and polishing powders ground material is preferred to natural sand on account of its whiteness and angularity. For all these purposes large quantities of pure quartz sand and sandstone are finely ground and yield a product fully equal to that obtained by grinding massive crystalline quartz.

Quartz crushed and graded to various sizes is used in making sandpaper and sand belts, as a scouring agent, for "frosting" glass with sand-blast apparatus, and for other purposes. Blocks of massive quartz and quartzite are used in the chemical industry as a filler

[1] Statistics on production were prepared by Estelle R. Phillips, of the Bureau of Mines. Figures on imports were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

for acid towers and as a flux in copper smelting. Crushed and ground quartz is also used in filters. Finely ground quartz is used in tooth powders and by dentists as a detergent. Silica of one form or another fused with soda ash makes sodium silicate ("water glass"), of which large quantities are manufactured for a great variety of uses.

Sand and crystalline quartz have been used in making silicon and alloys of silicon with iron, copper, and other metals in the electric furnace. Quartz may be fused in the electric furnace to make chemical apparatus, such as tubes, crucibles, and dishes. The report on silica in Mineral Resources for 1922 may be consulted for an account of the manufacture, properties, and uses of quartz glass thus made. The art of making fused quartz is nearly a hundred years old, but most of the early work was concerned with the opaque varieties made from sand. Only during the present century has progress been made in the development of clear fused quartz.

The material known commercially in the United States as tripoli, which is the siliceous residue of decomposed limestone, also yields an excellent grade of pulverized silica, which is used for the same purpose as silica powder obtained from massive crystalline quartz and from sand and sandstone. Diatomaceous (infusorial) earth is also used to make polishing powder and other products that are employed for uses similar to those for which quartz, sand, and tripoli powders are employed, but diatomaceous earth has somewhat different properties, and most of it finds different application as insulating and filter material.

PRODUCTION

The total production of the silica materials considered in this chapter, including tripoli and diatomaceous earth, as given in the table that follows, showed an increase of 13 per cent in quantity and 16 per cent in value in 1925 over the output of 1924. Quartz (crude and ground) from pegmatite dikes, from veins, and from quartzite increased 7 per cent in quantity but only 1 per cent in value. Ground sand and sandstone increase 15 per cent in quantity and 12 per cent in value. Tripoli increased 3 per cent in quantity and 12 per cent in value. Diatomaceous earth increased 16 per cent in quantity and 33 per cent in value.

Silica sold or used by producers in the United States for pottery, paints, fillers, polishers, abrasives, and other uses, 1923–1925

Material	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
Quartz (vein quartz, pegmatite, and quartzite)	20,601	$193,630	23,761	$203,177	25,444	$205,376
Sand and sandstone [1]	249,467	1,672,961	230,432	1,655,056	263,981	1,857,263
Tripoli (ground and otherwise prepared)	27,082	382,757	28,476	389,409	29,388	434,886
Diatomaceous earth	65,833	699,406	63,163	693,917	73,030	922,281
	362,983	2,948,754	345,832	2,941,559	391,843	3,419,806

[1] Includes only finely ground material. Figures probably incomplete.

QUARTZ

Crude and crushed quartz were sold or used by producers in 1925 in 12 States—California, Connecticut, Maine, Maryland, Massachusetts, Nevada, New Hampshire, New York, North Carolina, Pennsylvania, Washington, and Wisconsin. The States in the western part of the country, Wisconsin included, produced about 53 per cent of the total. The rest came from States along the Atlantic coast. Values for the crude quartz ranged from $1.50 to $9.19 a short ton f. o. b. mines, with an average value of $4.37, and for the crushed from $5 to $14, with an average value of $11.72. The total output of ground quartz reported to the Bureau of Mines amounted to 12,746 short tons, valued at $287,019. This output was made by the following concerns, which reported pegmatite quartz, vein quartz, and quartzite as their crude material:

American Encaustic Tiling Co. (Ltd.), 2030 East Fifty-second Street, Los Angeles, Calif.
American Grinding Co., 612 Pacific Mutual Building, Los Angeles, Calif.
Chamberlain Co. (Inc.), 2550 East Ninth Street, Los Angeles, Calif.
Eureka Flint & Spar Co., Trenton, N. J.
Golding Sons' Co., Trenton, N. J.
Lithowhite Silex Co., New Milford, Conn.
Maryland Quartz Co., 731 Munsey Building, Baltimore, Md.
Non-Metallic Minerals Corporation, 1001 Mission Road, Los Angeles, Calif.
Poxon Pottery Co., 2300 East Fifty-second Street, Los Angeles, Calif.
Standard Sanitary Manufacturing Co., Box W, Richmond, Calif.

Ground quartz sold in 1925 at prices ranging from $17 to $37 f. o. b. mills, with an average value of $22.52 a ton. California produced 56 per cent of the total ground quartz reported.

Quartz sold or used by producers in the United States, 1916–1925

Year	Crude		Ground		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1916	70,417	$78,283	18,097	$164,503	88,514	$242,786
1917	126,575	120,856	16,098	197,213	142,673	318,069
1918	61,008	121,888	10,732	137,442	71,740	259,330
1919	51,774	135,187	11,558	238,384	63,332	373,571
1920	59,423	142,397	8,767	177,953	68,190	320,350
1921	8,570	39,660	2,682	45,297	11,252	84,957
1922	5,085	23,093	5,568	78,254	10,653	101,347
1923	14,159	66,723	6,442	126,907	20,601	193,630
1924	20,570	123,099	3,191	80,078	23,761	203,177
1925	22,312	143,861	3,132	61,515	25,444	205,376

GROUND SAND AND SANDSTONE

Ground sand and sandstone amounting to 263,981 short tons, valued at $1,857,263, was sold or used by producers in Illinois, Missouri, New Jersey, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia. In order to avoid duplication of figures, ground sand or sandstone purchased and reground is not included in the above figures. Values per ton ranged from $4 to $10.37, with exceptional

values as high as $30 and an average value of about $7 a ton. The following 12 producers (who have 14 plants in all) reported for 1925:

Clinch Mountain Silica Sand Corporation, Box 476, Richmond, Va.
Golding Sons' Co., Trenton, N. J.
National Silica Co., Oregon, Ill.
National Silica Works, Berkeley Springs, W. Va.
New Jersey Pulverizing Co., 15 Park Row, New York, N. Y.
Ohio Silica Co., East Liverpool, Ohio.
Oliver Quartz Co., Charlotte, N.C.
Ottawa Silica Co., Ottawa, Ill.
Pennsylvania Glass Sand Co. (grinds in New Jersey, Pennsylvania, and West Virginia), Lewistown, Pa.
Pioneer Silica Co., Pacific, Mo.
Potters Mining & Milling Co., East Liverpool, Ohio.
Wedron Silica Co., First National Bank Building, Chicago, Ill.

Ground sand and sandstone sold or used by producers in the United States, 1916–1925 [1]

Year	Short tons	Value	Year	Short tons	Value
1916	110,603	$489,863	1921	105,887	$802,450
1917	532,454	1,195,142	1922	163,295	1,061,057
1918	98,956	620,584	1923	249,467	1,672,961
1919	47,277	288,890	1924	230,432	1,655,056
1920	158,395	1,183,014	1925	263,981	1,857,263

[1] Includes only finely ground material. Figures probably incomplete.

Ground sand and sandstone sold or used by producers in the United States in 1925, by States [1]

	Short tons	Value
Illinois and Missouri	88,692	$533,287
New Jersey	59,218	278,380
North Carolina, Virginia, and West Virginia	53,061	477,746
Ohio and Pennsylvania	63,010	567,850
	263,981	1,857,263

[1] Includes only finely ground material. Figures probably incomplete.

IMPORTS

Data on imports of silica materials are found in the records of the Bureau of Foreign and Domestic Commerce under the classifications "silica, crude," "silica, for use as pigment," and "flint, flints, and flint stones, unground." Imports of crude silica amounting to 22 short tons, valued at $486, are reported for 1925; 12 tons, valued at $254, for 1924; and 34 tons, valued at $550, for 1923. No imports of silica for use as pigment have been reported. The imports of "flint, flints, and flint stones, unground," are flint pebbles for grinding mills and for other uses such as are listed in this report. The imports of this last class of material amounted to 16,240 short tons, valued at $105,041, in 1925, a slight decrease from the quantity imported in 1924 but larger than that for any other year since 1920.

France was the source of 76 per cent of the "flint, flints, and flint stones, unground," imported in 1925, as compared with 67 per cent in 1924 and 56 per cent in 1923; the quantity imported from that country increased from 8,955 tons in 1923 to 12,309 tons in 1925. The quantities from Denmark and from Belgium, the next largest producers from whom our imports of these materials came, were less in 1925 than in the two years preceding.

The values assigned to the imports considered in the following tables are those upon which the import duties in the United States are levied and represent the foreign market value (or the export value, if higher) plus cost of containers and all expenses incident to placing merchandise ready for shipment to the United States, including export tax, if any.

"Flint, flints, and flint stones, unground," imported for consumption in the United States, 1916–1925

Year	Short tons	Value	Year	Short tons	Value
1916	(1)	$313,120	1921	10,084	$116,157
1917	(1)	197,156	1922	16,040	145,805
1918	(1)	127,808	1923	15,952	130,974
1919	19,798	250,096	1924	17,473	114,958
1920	26,636	338,630	1925	16,240	105,041

[1] Quantities not recorded prior to July, 1918. During last six months of 1918 the imports were 5,224 tons, valued at $55,440.

"Flint, flints, and flint stones, unground," imported into the United States, 1923–1925, by countries

Country	1923		1924		1925	
	Short tons	Value	Short tons	Value	Short tons	Value
Argentina			(1)	$20		
Belgium	2,012	$22,152	1,929	26,089	1,463	$23,547
Canada	766	3,409	6	84		
Czechoslovakia	32	484				
Denmark	3,908	43,886	3,681	33,892	2,284	21,494
France	8,955	57,401	11,636	53,080	12,309	59,247
Germany	226	2,572	184	1,497	1	16
Japan	(1)	5			32	358
Norway	19	700				
United Kingdom	34	365	37	296	(1)	6
West Indies—British					151	373
	15,952	130,974	17,473	114,958	16,240	105,041

[1] Less than 1 ton.

PETROLEUM

By G. R. Hopkins and A. B. Coons[1]

SUMMARY

The upward trend in the yearly production of crude petroleum in the United States was interrupted in 1924, but was resumed in 1925, when the output was 763,743,000 barrels—an increase over 1924 of 7 per cent and more than 30,000,000 barrels larger than the previous record made in 1923.

The world's production of crude petroleum in 1925 amounted to 1,067,761,000 barrels, of which the United States produced 71.5 per cent. This is a record figure chiefly by reason of the 50,000,000-barrel increase in the United States. The output of the second largest producing nation, Mexico, fell off approximately 25,000,000 barrels, but most of the other large producing countries registered gains. Venezuela for the second successive year more than doubled its output.

All the major producing areas of the United States, with the exception of the Rocky Mountain district and the Central States, registered gains over 1924. Production in the Mid-Continent field, which comprises over half of the total for the country, increased 13 per cent and was mainly responsible for the increase in national output. A slight increase in production was recorded in California as contrasted with the decline in 1924. The Appalachian field also registered a slight increase in production, this being the first year since 1919 that this field has not declined.

Imports of crude petroleum during 1925 amounted to approximately 61,824,000 barrels, a decrease from 1924 of 20.5 per cent. Mexico, from which the United States imported 55,049,000 barrels, continued to rank as the most important foreign source of supply. Imports from Venezuela (including imports recorded by Bureau of Foreign and Domestic Commerce as from Dutch West Indies) amounted to nearly 5,000,000 barrels, as compared with a little over a million barrels in 1924. Exports of crude petroleum in 1925 amounted to approximately 13,335,000 barrels, a decrease from 1924. Most of this oil was shipped to Canada.

In general, stocks of crude petroleum east of California were consistently reduced during 1925. On January 1, 1925, these stocks amounted to 321,114,000 barrels, as compared with 299,369,000 barrels on hand December 31, 1925, a decrease of 7 per cent. All types of crude petroleum stocks—that is, refinery, pipe-line, tank-farm, foreign crude petroleum held by importers, and producers' stocks—shared in this decline. On the other hand, total stocks of

[1] The tables in this report were prepared, unless otherwise indicated, by Misses A. B. Coons, M. N. Schellenger, and A. L. Clapp, and Mrs. C. S. Evans, of the Bureau of Mines. Figures on imports and exports were compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

light and heavy crude petroleum (including fuel oil) in California were increased 34 per cent, the former from 40,541,000 to 44,451,000 barrels, the latter from 55,964,000 to 84,983,000 barrels. Since stocks of heavy crude petroleum and manufactured fuel oil held in California were combined in 1925, it is not possible to compute the total consumption by the usual method of production plus imports minus exports plus or minus the difference in stocks. Consumption, as measured by runs to refinery stills in 1925, amounted to a total of 739,920,000 barrels of which 698,582,000 barrels, or 94 per cent, was domestic crude petroleum, and 41,338,000 barrels, or 6 per cent, was foreign crude petroleum. This was an increase in refinery consumption of 15 per cent over 1924. The total value at the wells of the output of crude petroleum in the United States in 1925 amounted to $1,284,960,000. This was an increase over 1924 of 25.6 per cent but does not quite equal the total value in 1920, when the average price was over $3 a barrel. The average price in 1925 was $1.68 as compared with $1.43 in 1924, a gain of 25 cents. Arkansas, the only State to record a value of less than $1, reported an average of $0.89 per barrel; the decrease from 1924 resulted from an oversupply of heavy crude, such as is obtained from the Smackover field. New York led all the States in value per barrel, its production bringing an average of $3.70 at the well. In general, 1925 prices were at the same level as during 1921 and 1922, the period that followed the abnormal prices of 1920 and preceded the heavy overproduction and consequent depression of 1923 and 1924. On December 31, 1925, there were in the United States 306,100 producing oil wells, an increase of 7,000 over the previous year. The average daily production per well at the end of 1925 was 6.5 barrels as compared with 6.2 in 1924. The total number of wells drilled in 1925 was 25,623, of which 16,559 were oil wells, 2,330 were gas wells, and 6,734 were dry holes.

Condensed summary of statistics of crude petroleum, 1921–1925

	1921	1922	1923	1924	1925
Domestic production.....thousands of barrels [1]	472,183	557,531	732,407	713,940	763,743
Imports.....do	125,364	127,308	82,015	77,775	61,824
	597,547	684,839	814,422	791,715	825,567
Indicated domestic demand [2].....do	526,032	592,432	714,862	748,462	[3] 698,294
Exports (including foreign crude oil).....do	8,940	10,163	17,385	17,973	13,335
Added to stocks [4].....do	62,575	82,244	82,175	25,280	[3] 30,096
	597,547	684,839	814,422	791,715	([5])
Runs to refinery stills.....do	443,363	500,706	581,238	643,719	739,920
World's production.....do	765,903	858,909	1,015,727	1,014,160	1,067,761
United States percentage of world's production	62	65	72	70	72
Total value of domestic production at wells.....thousands of dollars	814,745	895,111	978,430	1,022,683	1,284,960
Average price per barrel at wells	$1.73	$1.61	$1.34	$1.43	$1.68
Total number of producing oil wells in the United States, Dec. 31	274,500	284,880	290,100	299,100	306,100
Total number of oil wells completed in the United States during year	14,666	17,333	16,206	14,587	16,559

[1] 42 United States gallons.
[2] 1921–22: Deliveries to domestic consumers; 1923–1925: Domestic consumption.
[3] Includes all petroleum products; corresponding totals for 1924 are: Domestic demand, 663,473,000 barrels; added to stocks, 28,081,000 barrels.
[4] 1921–22: Producers', pipe-line, and tank-farm stocks of domestic petroleum and stocks of foreign petroleum held in the United States by importers; 1923–1925: Producers', pipe-line, tank-farm, and refinery stocks of domestic and foreign petroleum (topped oil topped in Mexico not included in 1924).
[5] Figures not available.

Summary of supply and demand of all oils (including wax, coke, asphalt, and residuum), 1924–25, by months

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1924													
Supply.													
Domestic crude production	57,273	55,889	60,141	59,830	61,834	59,583	61,932	62,398	60,376	60,469	56,782	57,433	713,940
Daily average	1,848	1,927	1,940	1,994	1,995	1,986	1,998	2,013	2,013	1,951	1,893	1,853	1,951
Imports—													
Crude	6,303	6,511	8,631	7,297	7,393	6,660	6,502	5,762	5,354	4,872	6,649	5,841	77,775
Refined [1]	1,351	1,562	1,481	1,180	1,869	1,423	1,460	1,728	797	1,371	1,129	1,455	16,506
Total new supply all oils	64,927	63,962	70,253	68,307	71,096	67,666	69,894	69,888	66,527	66,712	64,560	64,729	808,521
Daily average	2,094	2,206	2,266	2,277	2,293	2,256	2,255	2,254	2,218	2,152	2,152	2,088	2,209
Change in stocks all oils	1,557	10,267	7,069	7,535	6,291	4,106	1,664	2,359	[2] 2,591	[2] 3,708	[2] 2,564	[2] 3,904	28,081
Demand:													
Total demand	63,370	53,695	63,184	60,772	64,805	63,560	68,230	67,529	69,118	70,420	67,124	68,633	780,440
Daily average	2,044	1,852	2,038	2,026	2,090	2,119	2,201	2,178	2,304	2,272	2,237	2,214	2,132
Exports [3]—													
Crude	1,528	1,680	1,550	1,547	1,858	1,542	1,409	1,242	1,893	1,488	1,453	1,049	18,239
Refined [1]	7,023	7,839	7,580	8,718	8,625	9,123	7,896	8,750	8,900	8,496	7,768	8,010	98,728
Domestic demand [4]	54,819	44,176	54,054	50,507	54,322	52,895	58,925	57,537	58,325	60,436	57,903	59,574	663,473
Daily average	1,768	1,523	1,744	1,684	1,752	1,763	1,901	1,856	1,944	1,950	1,930	1,922	1,813
Excess of daily average domestic production over domestic demand	80	404	196	310	243	223	97	157	69	1	[5] 37	[5] 69	138
Stocks (end of month)													
Crude—													
East of California [6]	296,305	299,681	301,969	307,950	311,970	315,206	318,547	323,609	324,306	322,565	319,859	312,725	----
California—													
Light	35,580	37,633	37,922	38,132	38,540	39,188	40,407	40,255	40,684	41,064	39,639	40,541	----
Heavy [7]	48,836	49,113	48,769	49,594	50,689	51,882	52,156	52,799	52,683	53,298	54,713	55,964	----
	380,721	386,427	388,660	395,676	401,199	406,276	411,110	416,663	417,673	416,927	414,211	409,230	----
Total refined [1]	104,351	108,912	113,748	114,267	115,035	114,064	110,894	107,700	104,099	101,137	101,289	102,366	----
Grand total stocks	485,072	495,339	502,408	509,943	516,234	520,340	522,004	524,363	521,772	518,064	515,500	511,596	----

[1] Including wax, coke, asphalt, and residuum, in barrels
[2] Decrease.
[3] Includes shipments to noncontiguous territories.
[4] Inclusive of bunker oil put on vessels engaged in foreign trade
[5] Deficiency.
[6] Exclusive of producers' stocks.
[7] Includes fuel oil.

Summary of supply and demand of all oils (including wax, coke, asphalt, and residuum), 1924–25, by months—Continued

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1925													
Supply:													
Domestic crude petroleum—													
Light	53,802	48,571	53,597	51,914	53,367	51,915	52,138	52,198	51,559	51,763	49,921	49,622	620,367
Heavy	6,598	6,204	7,742	10,134	15,483	15,325	15,625	15,382	13,873	13,079	12,006	11,925	143,376
	60,400	54,775	61,339	62,048	68,850	67,240	67,763	67,580	65,432	64,842	61,927	61,547	763,743
Daily average	1,948	1,956	1,978	2,068	2,220	2,241	2,186	2,180	2,181	2,092	2,064	1,985	2,092
Imports—													
Crude	7,025	5,579	6,375	5,482	6,484	5,153	4,155	4,045	4,027	4,367	4,891	4,241	61,824
Refined [1]	1,405	1,712	1,667	1,475	1,532	2,074	1,700	1,292	877	951	919	772	16,376
Total new supply all oils	68,830	62,066	69,381	69,005	76,866	74,467	73,618	72,917	70,336	70,160	67,737	66,560	841,943
Daily average	2,220	2,140	2,238	2,300	2,480	2,482	2,375	2,352	2,345	2,263	2,258	2,147	2,307
Change in stocks all oils	5,512	6,209	6,052	4,292	9,783	5,529	1,315	[2] 409	456	[2] 1,679	[2] 1,431	[2] 5,533	30,096
Demand:													
Total demand	63,318	55,857	63,329	64,713	67,083	68,938	72,303	73,326	69,880	71,839	69,168	72,093	811,847
Daily average	2,043	1,926	2,043	2,157	2,164	2,298	2,332	2,365	2,329	2,317	2,306	2,326	2,224
Exports [3]—													
Crude	1,149	1,122	1,058	798	1,356	1,255	1,302	1,465	923	1,292	740	877	13,337
Refined [1]	7,546	7,154	9,095	8,409	8,363	8,654	8,289	8,428	7,372	8,521	8,769	9,616	100,216
Domestic demand [4]	54,623	47,581	53,176	55,506	57,364	59,029	62,712	63,433	61,585	62,026	59,659	61,600	698,294
Daily average	1,762	1,641	1,715	1,850	1,850	1,968	2,023	2,046	2,053	2,001	1,989	1,987	1,913
Excess daily average domestic production over domestic demand	186	315	263	218	370	273	163	134	128	91	75	[5] 2	179
Stocks (end of month):													
Crude—													
East of California [6]	311,019	310,326	308,729	308,934	311,947	310,694	308,231	303,291	301,156	298,193	296,904	291,809	----
California—													
Light	41,914	42,450	43,422	44,040	44,600	44,058	43,411	41,566	43,007	44,059	44,561	44,451	----
Heavy [7]	58,112	59,279	60,299	62,565	65,481	68,337	72,388	78,507	81,476	83,391	84,373	84,983	----
	411,045	412,055	412,450	415,539	422,028	423,089	424,030	423,364	425,639	425,643	425,838	421,243	----
Total refined [1]	106,063	111,262	116,919	118,122	121,416	125,884	126,258	126,515	124,696	123,013	121,387	120,449	----
Grand total stocks	517,108	523,317	529,369	533,661	543,444	548,973	550,288	549,879	550,335	548,656	547,225	541,692	----

[1] Including wax, coke, asphalt, and residuum, in barrels.
[2] Decrease.
[3] Includes shipments to noncontiguous territories.
[4] Inclusive of bunker oil put on vessels engaged in foreign trade.
[5] Deficiency.
[6] Exclusive of producers' stocks.
[7] Includes fuel oil.

PRODUCTION

DOMESTIC PRODUCTION

BY MONTHS

As has been the rule in most years, the production of crude petroleum in 1925 was lowest at the beginning and end of the year; that is, during the cold season. The highest monthly output in 1925 was in May, 68,850,000 barrels; the highest daily average production was in June, 2,241,000 barrels, and was the highest ever recorded.

Petroleum produced in the United States, 1921–1925, by months, in thousands of barrels

Year	January	February	March	April	May	June	July
1921	38,138	35,524	41,105	40,233	42,189	40,548	40,461
1922	43,696	41,314	47,188	45,167	47,002	46,087	47,134
1923	52,527	48,588	56,969	59,008	62,377	62,845	65,925
1924	57,273	55,889	60,141	59,830	61,834	59,583	61,932
1925	60,400	54,775	61,339	62,048	68,850	67,240	67,763

Year	August	September	October	November	December	The year
1921	41,109	36,763	35,832	38,108	42,173	472,183
1922	47,059	45,805	48,410	48,027	50,642	557,531
1923	66,422	65,306	67,506	65,388	59,546	732,407
1924	62,398	60,376	60,469	56,782	57,433	713,940
1925	67,580	65,432	64,842	61,927	61,547	763,743

BY FIELDS

During 1925 the Mid-Continent field continued to be the chief producing area of the country. This field includes Kansas, Oklahoma, Arkansas, and Texas and Louisiana, exclusive of the Gulf coast, and the output amounted to 424,331,000 barrels, or 56 per cent of the total for the country. As in 1924, California ranked second among the producing areas. Only one of the seven major fields or areas showed a material decline of output in 1925; this was the Rocky Mountain, which recorded a decrease of 17 per cent.

Petroleum produced in the United States, 1924–25, by fields

[Thousands of barrels of 42 U. S. gallons]

Field	January	February	March	April	May	June	July	August
1924								
Appalachian	2,100	2,104	2,268	2,343	2,361	2,254	2,416	2,251
Lima-Indiana	162	181	202	209	210	211	207	192
Illinois and southwestern Indiana	683	705	786	680	775	749	784	744
Mid-Continent	26,923	27,375	30,822	31,075	32,684	31,822	32,966	33,882
Gulf coast [1]	2,321	2,432	2,538	2,273	2,395	2,303	2,519	2,352
Rocky Mountain [2]	4,389	3,951	3,823	4,156	3,789	3,640	3,740	3,846
California [3]	20,695	19,141	19,702	19,094	19,620	18,604	19,300	19,131
	57,273	55,889	60,141	59,830	61,834	59,583	61,932	62,398
1925								
Appalachian	2,198	2,099	2,342	2,350	2,294	2,379	2,417	2,333
Lima-Indiana	166	165	183	190	182	198	193	182
Illinois and southwestern Indiana	718	657	778	644	715	723	749	698
Mid-Continent	33,533	30,267	33,431	34,880	40,408	38,758	37,716	37,158
Gulf coast [1]	2,145	1,980	2,795	2,872	3,255	2,930	3,112	2,895
Rocky Mountain	2,635	2,502	2,916	2,889	2,879	2,800	3,056	3,190
California [3]	19,004	17,104	18,893	18,222	19,116	19,451	20,519	21,123
Other [4]	1	1	1	1	1	1	1	1
	60,400	54,775	61,339	62,048	68,850	67,240	67,763	67,580

Field	September	October	November	December	The year		
					Quantity	Value at wells	
						Total (thousands of dollars)	Average per barrel
1924							
Appalachian	2,298	2,434	2,075	2,152	27,056	80,855	$2.99
Lima-Indiana	194	202	157	160	2,287	4,550	1.99
Illinois and southwestern Indiana	738	767	672	664	8,747	15,420	1.76
Mid-Continent	33,120	32,668	31,116	31,026	375,479	549,570	1.46
Gulf coast [1]	2,339	2,589	2,333	2,175	28,569	44,620	1.56
Rocky Mountain [2]	3,363	3,092	2,642	2,438	42,869	53,015	1.24
California [3]	18,324	18,717	17,787	18,818	228,933	274,653	1.20
	60,376	60,469	56,782	57,433	713,940	1,022,683	1.43
1925							
Appalachian	2,346	2,380	2,193	2,279	27,610	85,440	3.09
Lima-Indiana	179	173	152	157	2,120	4,580	2.16
Illinois and southwestern Indiana	721	731	688	690	8,512	16,480	1.94
Mid-Continent	35,818	35,237	33,861	33,264	424,331	732,930	1.73
Gulf coast [1]	2,878	2,903	2,677	2,670	33,112	53,360	1.61
Rocky Mountain	3,211	3,260	3,163	3,053	35,554	61,516	1.73
California [3]	20,278	20,157	19,192	19,433	232,492	330,610	1.42
Other [4]	1	1	1	1	12	44	3.67
	65,432	64,842	61,927	61,547	763,743	1,284,960	1.68

[1] Salt-dome pools.
[2] Includes Alaska.
[3] Annual and semiannual figures from California State Mining Bureau. Monthly figures for California prorated on basis of monthly reports by the American Petroleum Institute.
[4] Alaska and Michigan.

BY STATES

The chief petroleum-producing States in 1925, as in 1924, were, in the order named, California, Oklahoma, Texas, and Arkansas. These four States produced 83 per cent of the total output of the country in 1925. The changes in rank, as compared with 1924, of the 10 most important producing States were as follows: Kansas advanced from sixth to fifth place at the expense of Wyoming; Pennsylvania, from ninth to eighth, displacing Illinois; and Ohio, from eleventh to tenth, displacing Kentucky.

Petroleum produced in the United

[Thousands of barrels

Year	New York	Pennsylvania	West Virginia	Kentucky	Tennessee	Ohio	Indiana	Illinois	Kansas	Oklahoma
1859–1875	(2)	[2] 74,072								
1876	(2)	[2] 8,969	120			32				
1877	(2)	[2] 13,135	172			30				
1878	(2)	[2] 15,164	180			38				
1879	(2)	[2] 19,685	180			29				
1880	(2)	[2] 26,028	179			39				
1881	(2)	[2] 27,376	151			34				
1882	6,685	23,368	128			40				
1883	4,004	19,125	126	[3] 5	(3)	47				
1884	3,231	20,541	90	[3] 4	(3)	90				
1885	2,658	18,118	91	[3] 5	(3)	662				
1886	2,151	23,647	102	[3] 5	(3)	1,783				
1887	2,075	20,281	145	[3] 5	(3)	5,023				
1888	(2)	[2] 16,489	119	[3] 5	(3)	10,011				
1889	1,897	19,591	544	[3] 5	(3)	12,472	33	1.5	0.5	
1890	(2)	[2] 28,458	493	[3] 6	(3)	16,125	64	1	1	
1891	1,585	31,424	2,406	[3] 9	(3)	17,740	137	.5	1.5	(4)
1892	1,273	27,149	3,810	[3] 7	(3)	16,363	698	1	5	(4)
1893	1,032	19,283	8,446	[3] 3	(3)	16,249	2,335	1	18	(4)
1894	942	18,078	8,577	[3] 2	(3)	16,792	3,689	(4)	40	(4)
1895	913	18,231	8,120	[3] 2	(3)	19,545	4,386	(4)	44	(4)
1896	1,205	19,379	10,020	[3] 2	(3)	23,941	4,681	(4)	114	(4)
1897	1,279	17,983	13,090	([3] 4)	(3)	21,561	4,122	1	81	1
1898	1,205	14,743	13,615	[3] 6	(3)	18,739	3,731	(4)	72	
1899	1,321	13,054	13,911	[3] 18	(3)	21,142	3,848	(4)	70	
1900	1,301	13,258	16,196	[3] 62	(3)	22,363	4,874	(4)	75	6
1901	1,207	12,625	14,177	[3] 137	(3)	21,648	5,757	(4)	179	10
1902	1,120	12,064	13,513	[3] 185	(3)	21,014	7,481	(4)	332	37
1903	1,163	11,355	12,900	[3] 554	(3)	20,480	9,186		932	139
1904	1,113	11,126	12,645	[3] 998	(3)	18,877	11,339		4,251	1,367
1905	1,118	10,437	11,578	[3] 1,217	(3)	16,347	10,964	181	[5] 12,014	(5)
1906	1,243	10,257	10,121	[3] 1,214	(3)	14,788	7,674	4,397	[5] 21,718	(5)
1907	1,212	10,000	9,095	[3] 821	(3)	12,207	5,128	24,282	2,410	43,524
1908	1,160	9,424	9,523	728		10,859	3,283	33,686	1,801	45,799
1909	1,135	9,299	10,745	639		10,633	2,296	30,898	1,264	47,859
1910	1,054	8,795	11,753	469		9,916	2,160	33,143	1,128	52,029
1911	953	8,248	9,796	472		8,817	1,695	31,317	1,279	56,069
1912	874	7,838	12,129	484		8,969	970	28,602	1,593	51,427
1913	948	7,917	11,567	525		8,781	956	23,894	2,375	63,579
1914	939	8,170	9,680	503		8,536	1,336	21,920	3,104	73,632
1915	888	7,838	9,265	437		7,825	876	19,042	2,823	97,915
1916	874	7,593	8,731	1,202	1	7,744	769	17,714	8,738	107,072
1917	880	7,733	8,379	3,088	12	7,751	760	15,777	36,536	107,508
1918	809	7,408	7,867	4,368	8	7,285	878	13,366	45,451	103,347
1919	851	8,137	8,327	9,278	15	7,736	972	11,960	33,048	86,911
1920	906	7,438	8,249	8,738	14	7,400	945	10,774	39,005	106,206
1921	988	7,418	7,822	9,013	12	7,335	1,158	10,043	36,456	114,634
1922	1,000	7,425	7,021	8,973	10	6,781	1,087	9,383	31,766	149,571
1923	1,250	7,609	6,358	8,069	8	7,085	1,043	8,707	28,250	160,929
1924	1,440	7,486	5,920	7,407	10	6,811	935	8,081	28,836	173,538
1925	1,695	8,097	5,763	6,759	24	7,212	829	7,863	38,357	176,768
	[7] 61,577	[7] 788,366	343,935	76,429	114	513,727	113,075	365,036	384,168	1,819,877
Percentage of total production	0.7	9.1	4.0	0.9		5.9	1.3	4.2	4.4	21.0

[1] 1889–1899, Missouri; 1900–1906, Michigan and Missouri; 1907–1911, Michigan, Missouri, and Utah; 1912, 1917, 1918, Alaska and Michigan; 1913 and 1919, Alaska, Michigan, Missouri, and New Mexico; 1914–1916, Alaska, Michigan, and Missouri; 1920, Alaska, Arkansas, Missouri, New Mexico, and Utah; 1921–1923, Alaska, Missouri, and New Mexico; 1924, Alaska and Utah; 1925, Alaska, Michigan, and Utah.

[2] New York included with Pennsylvania.

[3] Tennessee included with Kentucky.

States, 1859–1925, by States

of 42 U. S. gallons]

Arkansas	Louisiana	Texas	Montana	Wyoming	Colorado	New Mexico	California	Other[1]	Total		
										Value at wells	
									Quantity	Total (thousands of dollars)	Average per barrel
------	------	------	------	------	------	------	------	------	74,072	215,781	$2.91
------	------	------	------	------	------	------	12	------	9,133	22,983	2.52
------	------	------	------	------	------	------	13	------	13,350	31,789	2.38
------	------	------	------	------	------	------	15	------	15,397	18,045	1.17
------	------	------	------	------	------	------	20	------	19,914	17,211	.86
------	------	------	------	------	------	------	40	------	26,286	24,601	.94
------	------	------	------	------	------	------	100	------	27,661	25,448	.92
------	------	------	------	------	------	------	129	------	30,350	23,631	.78
------	------	------	------	------	------	------	143	------	23,450	25,790	1.10
------	------	------	------	------	------	------	262	------	24,218	20,596	.85
------	------	------	------	------	------	------	325	------	21,859	19,198	.88
------	------	------	------	------	------	------	377	------	28,065	19,996	.71
------	------	------	------	------	76	------	678	------	28,283	18,877	.67
------	------	------	------	------	298	------	690	------	27,612	17,948	.65
------	------	(4)	------	------	317	------	303	(1 4)	35,164	26,963	.77
------	------	(4)	------	------	369	------	307	(1 4)	45,824	35,365	.77
------	------	(4)	------	------	666	------	324	(1 4)	54,293	30,527	.56
------	------	(4)	------	------	824	------	385	(1 4)	50,515	25,907	.51
------	------	(4)	------	------	594	------	470	(1 4)	48,431	28,950	.60
------	------	(4)	------	2	516	------	706	(1 4)	49,344	35,522	.72
------	------	(4)	------	4	438	------	1,209	(1 4)	52,892	57,632	1.09
------	------	1	------	3	361	------	1,253	(1 4)	60,960	58,519	.96
------	------	66	------	4	385	------	1,903	(1 4)	60,476	40,874	.68
------	------	546	------	6	444	------	2,257	(1 4)	55,364	44,193	.80
------	------	669	------	6	390	------	2,642	(1 4)	57,071	64,604	1.13
------	------	836	------	6	317	------	4,325	2	63,621	75,989	1.19
------	------	4,394	------	5	461	------	8,787	2	69,389	66,417	.96
------	549	18,084	------	6	397	------	13,984	1	88,767	71,179	.80
------	918	17,956	------	9	484	------	24,382	3	100,461	94,694	.94
------	2,959	22,241	------	12	501	------	29,649	3	117,081	101,175	.86
------	8,910	28,136	------	8	376	------	33,428	3	134,717	84,157	.62
------	9,077	12,568	------	7	328	------	33,099	3	126,494	92,445	.73
------	5,000	12,323	------	9	332	------	39,748	4	166,095	120,107	.72
------	5,789	11,207	------	18	380	------	44,855	15	178,527	129,079	.72
------	3,060	9,534	------	20	311	------	55,472	6	183,171	128,329	.70
------	6,841	8,899	------	115	240	------	73,011	4	209,557	127,900	.61
------	10,721	9,526	------	187	227	------	81,134	8	220,449	134,045	.61
------	9,263	11,735	------	1,572	206	------	87,269	4	222,935	164,213	.74
------	12,499	15,010	------	2,407	189	(6)	97,788	11	248,446	237,121	.95
------	14,309	20,068	------	3,560	223	------	99,775	8	265,763	214,125	.81
------	18,192	24,943	------	4,246	208	------	86,592	14	281,104	179,463	.64
------	15,248	27,645	45	6,234	197	------	90,952	8	300,767	330,900	1.10
------	11,392	32,413	100	8,978	121	------	93,878	10	335,316	522,635	1.56
------	16,043	38,750	69	12,596	143	------	97,532	8	355,928	703,944	1.98
------	17,188	79,366	90	13,172	121	(6)	101,183	12	378,367	760,266	2.01
(6)	35,714	96,868	340	16,831	111	(6)	103,377	13	442,929	1,360,745	3.07
10,473	27,103	106,166	1,509	19,333	108	(6)	112,600	12	472,183	814,745	1.73
12,712	35,376	118,684	2,449	26,715	97	(6)	138,468	13	557,531	895,111	1.61
36,610	24,919	131,023	2,782	44,785	86	(6)	262,876	18	732,407	978,430	1.34
46,028	21,124	134,522	2,815	39,498	445	98	228,933	13	713,940	1,022,683	1.43
77,308	20,272	144,648	4,091	29,173	1,226	1,060	232,492	16	763,743	1,284,960	1.68
183,221	332,466	1,138,827	14,290	229,527	13,513	[8]1,158	2,290,152	214	8,669,672	11,645,807	------
2.1	3.8	13.1	0.2	2.7	0.2	------	26.4	------	100.0	----------	------

[4] Less than 500 barrels. See Mineral Resources, 1916, pt. 2, pp. 684–685.
[5] Oklahoma included with Kansas.
[6] Included under "Other."
[7] Early production in New York included with Pennsylvania.
[8] Figures represent 1924 and 1925 production only. Earlier years included under "Other."

Petroleum produced in the United States, 1924–25, by States

[Thousands of barrels of 42 U. S. gallons]

State	January	February	March	April	May	June	July	August	September	October	November	December	The year	Value at wells (thousands of dollars)
1924														
Arkansas	2,952	3,111	3,776	3,985	4,588	4,308	4,538	4,331	3,925	3,883	3,462	3,169	46,028	43,130
California [1]	20,695	19,141	19,702	19,094	19,620	18,604	19,300	19,131	18,324	18,717	17,787	18,818	228,933	274,653
Colorado	6	8	8	8	8	10	48	85	77	66	65	56	445	490
Illinois	631	650	734	619	713	691	722	689	684	710	623	615	8,081	14,220
Indiana:														
Southwestern	52	55	52	61	62	58	62	55	54	57	49	49	666	1,200
Northeastern	18	22	24	27	27	26	26	23	22	22	16	16	269	520
Total Indiana	70	77	76	88	89	84	88	78	76	79	65	65	935	1,720
Kansas	2,113	2,131	2,276	2,341	2,513	2,399	2,460	2,678	2,609	2,630	2,431	2,255	28,836	44,400
Kentucky	586.4	596.3	636.4	643.4	647.7	611.4	677.4	615.6	625.2	631.6	566.3	569.3	7,407	14,592
Louisiana:														
Gulf coast [2]	192	176	192	171	193	201	210	199	220	270	231	232	2,487	4,050
Northern	1,534	1,429	1,500	1,494	1,704	1,605	1,652	1,651	1,566	1,571	1,513	1,418	18,637	26,290
Total Louisiana	1,726	1,605	1,692	1,665	1,897	1,806	1,862	1,850	1,786	1,841	1,744	1,650	21,124	30,340
Montana	153	144	174	268	266	245	249	284	294	274	241	223	2,815	3,754
New Mexico	1	1	1	1	1	1	1	19	21	19	16	16	98	127
New York	106	106	117	119	128	118	130	118	133	129	114	122	1,440	5,245
Ohio:														
Central and eastern	368	358	393	409	408	391	419	401	411	440	386	409	4,793	13,135
Northwestern	144	159	178	182	183	185	181	169	172	180	141	144	2,018	4,030
Total Ohio	512	517	571	591	591	576	600	570	583	620	527	553	6,811	17,165
Oklahoma	12,109	12,448	13,262	13,850	14,181	14,262	15,041	16,032	16,109	15,713	15,258	15,273	173,538	272,450
Pennsylvania	560	562	626	659	669	638	665	628	638	692	566	583	7,486	27,025
Tennessee	.6	.7	.6	.6	.3	.6	.6	.4	.8	.4	1.7	2.7	10	18
Texas:														
Gulf coast [2]	2,129	2,256	2,346	2,102	2,202	2,102	2,309	2,153	2,119	2,319	2,102	1,943	26,082	40,570
Rest of State	8,215	8,256	10,008	9,405	9,698	9,248	9,275	9,190	8,911	8,871	8,452	8,911	108,440	163,300
Total Texas	10,344	10,512	12,354	11,507	11,900	11,350	11,584	11,343	11,030	11,190	10,554	10,854	134,522	203,870
West Virginia	479	481	495	512	508	495	524	488	490	541	441	466	5,920	20,840
Wyoming	4,228	3,797	3,639	3,878	3,513	3,383	3,441	3,457	2,970	2,732	2,319	2,141	39,498	48,600
Other [3]	1	1	1	1	1	1	1	1	1	1	1	2	13	44
United States	57,273	55,889	60,141	59,830	61,834	59,583	61,932	62,398	60,376	60,469	56,782	57,433	713,940	1,022,683

1925														
Arkansas	3,223	2,917	3,781	5,710	10,187	9,348	8,163	7,974	7,028	6,608	6,165	6,294	77,398	68,880
California [1]	19,004	17,104	18,893	18,222	19,116	19,451	20,519	21,123	20,278	20,157	19,192	19,433	232,492	330,610
Colorado	63	57	85	68	75	59	96	103	143	149	169	159	1,226	1,810
Illinois	662	604	728	586	661	665	690	647	667	677	639	637	7,863	15,235
Indiana:														
Southwestern	56	53	50	58	54	58	59	51	54	54	49	53	649	1,245
Northeastern	15	15	18	18	16	17	17	16	14	12	11	11	180	370
Total Indiana	71	68	68	76	70	75	76	67	68	66	60	64	829	1,615
Kansas	2,455	2,534	2,835	2,942	3,448	3,563	3,613	3,604	3,424	3,458	3,267	3,214	38,357	74,410
Kentucky	575.7	544.4	592.4	579.5	580.6	567.2	598.6	556	561.6	552.8	534.2	516	6,759	15,682
Louisiana:														
Gulf coast [2]	224	196	227	215	260	214	260	268	296	355	364	348	3,227	5,080
Northern	1,492	1,340	1,488	1,490	1,507	1,449	1,458	1,456	1,379	1,367	1,291	1,328	17,045	27,420
Total Louisiana	1,716	1,536	1,715	1,705	1,767	1,663	1,718	1,724	1,675	1,722	1,655	1,676	20,272	32,500
Montana	243	232	239	247	295	327	366	406	393	469	488	386	4,091	6,420
New Mexico	20	16	35	57	57	76	105	127	133	151	145	138	1,060	1,815
New York	125	122	139	134	138	146	150	148	147	152	144	150	1,695	6,270
Ohio:														
Central and eastern	409	393	438	447	428	453	458	447	450	460	423	466	5,272	14,070
Northwestern	151	150	165	172	166	181	176	166	165	161	141	146	1,940	4,210
Total Ohio	560	543	603	619	594	634	634	613	615	621	564	612	7,212	18,280
Oklahoma	15,002	13,989	14,776	14,818	14,775	14,684	14,777	14,797	15,228	15,020	14,789	14,113	176,768	348,230
Pennsylvania	613	593	684	697	669	700	708	704	701	710	651	667	8,097	29,310
Tennessee	.3	.6	.6	1.5	1.4	1.8	1.4	2	1.4	2.2	4.8	6	24	53
Texas:														
Gulf coast [3]	1,921	1,784	2,568	2,657	2,995	2,716	2,852	2,627	2,582	2,548	2,313	2,322	29,885	48,280
Rest of State	11,361	9,487	10,551	9,920	10,491	9,714	9,705	9,327	8,759	8,784	8,349	8,315	114,763	213,990
Total Texas	13,282	11,271	13,119	12,577	13,486	12,430	12,557	11,954	11,341	11,332	10,662	10,637	144,648	262,270
West Virginia	475	446	488	491	477	511	501	476	485	503	436	474	5,763	20,055
Wyoming	2,309	2,197	2,557	2,517	2,452	2,338	2,489	2,554	2,541	2,490	2,360	2,369	29,173	51,467
Other [4]	1	1	1	1	1	1	1	1	2	2	2	2	16	48
United States	60,400	54,775	61,339	62,048	68,850	67,240	67,763	67,580	65,432	64,842	61,927	61,547	763,743	1,284,960

[1] Annual and semiannual figures from California State Mining Bureau. Monthly figures for California prorated on basis of monthly reports by the American Petroleum Institute.
[2] Salt-dome pools.
[3] Alaska and Utah.
[4] Alaska, 8,000 barrels, valued at $34,000; Michigan, 4,000 barrels, $10,000; and Utah, 4,000 barrels, $4,000.

Arkansas.—In 1925 Arkansas produced 77,398,000 barrels, an increase of 68 per cent over 1924, the highest percentage gain recorded for any of the 10 leading States. Of the total output in Arkansas in 1925 Smackover produced 72,144,000 barrels, or 93 per cent.

The outstanding development during 1925 was the discovery of the Graves or third sand (the Meekin or light oil sand is classed as the second sand) in the Smackover field in February. This sand, about 25 feet thick, lies about 450 feet below the top of the Nacatoch, or first sand, or 2,250 to 2,300 feet below sea level. It was developed rapidly and in three months had reached its peak of nearly 400,000 barrels a day. This figure is the record both for production in one field and production from one sand. A fourth sand, the Blossom, was discovered in the middle of the year. It lies approximately 600 feet below the top of the Nacatoch and is about 20 feet thick. The production from this sand was disappointing in view of the yield from the Graves sand, but considerable work remains to be done before its possibilities, or those of the several unidentified sands below it, are clearly defined.

The remaining fields of the State—namely, El Dorado, Stephens, and Irma—all made a decreased production in 1925.

Considerable wildcatting was done during the year but with little success. The outstanding discovery was in the latter part of the year in Lafayette County when the Arkansas Fuel Oil Co. brought in a well with a daily production of 15 barrels of oil with a gravity of 26° B.

Petroleum produced in Arkansas, 1921–1925, by districts

[Thousands of barrels of 42 U. S. gallons]

Year	El Dorado	Irma	Smackover	Stephens	Total
1921	10,473				10,473
1922	10,592		2,107	13	12,712
1923	5,830	(1)	30,048	[1] 732	36,610
1924	4,760	450	40,000	818	46,028
1925	4,247	334	72,144	673	77,398

[1] Irma included with Stephens.

Petroleum produced in Arkansas, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1924															
El Dorado	435	400	420	418	452	432	420	441	401	402	346	331	4,898	−138	4,760
Irma							6	14	30	37	24	21	132	318	450
Smackover	2,334	2,539	3,169	3,378	3,935	3,690	3,923	3,684	3,318	3,261	2,918	2,640	38,789	[1] 1,211	40,000
Stephens	65	62	69	75	83	72	71	74	62	65	60	59	817	1	818
	2,834	3,001	3,658	3,871	4,470	4,194	4,420	4,213	3,811	3,765	3,348	3,051	44,636	1,392	46,028
1925															
El Dorado	330	297	332	319	316	344	418	421	399	362	353	319	4,210	37	4,247
Irma	26	18	11	11	10	15				32	26	28	177	157	334
Smackover	2,722	2,471	3,303	5,245	9,721	8,856	7,606	7,417	6,497	6,085	5,659	5,816	71,398	746	72,144
Stephens	60	54	50	53	55	51	54	51	50	44	45	46	613	60	673
	3,138	2,840	3,696	5,628	10,102	9,266	8,078	7,889	6,946	6,523	6,083	6,209	76,398	1,000	77,398

[1] Estimated in part.

California.—The output of crude petroleum in California in 1925 amounted to 232,492,000 barrels, a gain of only 3,559,000 barrels over 1924. The largest single factor in maintaining production during 1925 was the Inglewood field, which was discovered in November, 1924, but produced little oil until 1925, when its total production was 18,372,000 barrels. Because of the relative shallowness of the wells little importance was attached to this field until March, 1925, when several big wells came in. Following this the development was fairly rapid until the peak of 110,000 barrels daily was reached the first part of August. The crude from this field averages 20° A. P. I. and is primarily a fuel oil. Inglewood was the chief cause of the large increase in stocks of heavy crude and fuel oil in the State during 1925.

Completion in January of a 5,000-barrel well in a deep sand at 5,150 feet revived interest in the old Ventura Avenue field. The field was conservatively developed and in December had a production of only 30,000 barrels. The large initial production of the wells and the extent of the structure make this field one of the most important potentially in the State.

An interesting development in 1925 was the extension of the Long Beach field to the northwest, a possibility that had been realized by many for a long time. However, very few of the wells had an initial production of more than 500 barrels and the town-lot drilling that followed had little effect on the market.

Rosecrans and Dominguez increased their production in 1925, though the former did not come up to expectations. Long Beach suffered a 32 per cent drop but continued to rank first among the producing fields in the State.

Considerable wildcatting was done in most parts of the State, and the vicinity of Los Angeles again received considerable attention. No new fields of importance were discovered, though the efforts of 1925 were mainly responsible for the proving of the Seal Beach structure in the early part of 1926.

During 1924 and 1925 many wells in the Los Angeles basin fields were put on the pump; their depth and the prevalence of trouble from sand stimulated the development of new methods and equipment to bring the oil to the surface. That efforts were effective is attested by the fact that the California output was larger than in 1924, although the number of oil wells completed was 23 per cent less.

Petroleum produced in California, 1921–1925, by counties [1]

[Thousands of barrels of 42 U. S. gallons]

County	1921	1922	1923	1924	1925
Fresno	12,162	9,266	5,061	10,156	7,774
Kern	57,435	53,512	45,953	61,175	58,853
Los Angeles	12,396	37,726	158,665	119,028	121,214
Orange	22,929	31,049	46,475	31,661	32,734
San Luis Obispo	[2] 31	[2] 34	33	31	30
Santa Barbara	5,466	3,931	3,062	2,905	2,647
Santa Clara	14	16	[2] 16	[3] 19	[3] 18
Ventura	2,167	2,934	3,611	3,958	9,222
	112,600	138,468	262,876	228,933	232,492

[1] California State Mining Bureau.
[2] Includes San Mateo.
[3] Includes San Mateo and San Bernardino.

Petroleum produced in California, 1924–25, by fields

[Barrels of "clean oil," from State mining bureau]

Field	1924			1925		
	Jan. 1 to June 30	July 1 to Dec. 31	Total	Jan. 1 to June 30	July 1 to Dec. 31	Total
District No. 1:						
Beverly Hills	76,161	73,285	149,446	77,551	77,805	155,356
Brea Olinda	1,987,232	2,153,532	4,140,764	2,222,172	2,398,051	4,620,223
Coyote Hills	1,894,136	3,717,576	5,611,712	3,778,599	3,511,808	7,290,407
Dominguez	856,031	5,894,730	6,750,761	8,304,626	5,213,775	13,518,401
Huntington Beach	9,691,853	7,644,080	17,335,933	7,781,437	8,522,295	16,303,732
Inglewood		6,180	6,180	2,620,186	15,751,350	18,371,536
Long Beach	34,278,304	25,813,487	60,091,791	21,168,239	19,395,621	40,563,860
Montebello	3,086,775	3,143,545	6,230,320	3,445,126	3,456,759	6,901,885
Newhall	32,154	40,738	72,892	40,998	44,931	85,929
Newport		20,250	20,250	19,796	17,523	37,319
Richfield	2,381,754	2,194,464	4,576,218	2,072,658	2,413,321	4,485,979
Rosecrans	40,607	493,896	534,503	3,337,838	4,388,545	7,726,383
Salt Lake	302,383	236,746	539,129	197,364	191,253	388,617
Santa Fe Springs	16,151,853	11,084,543	27,236,396	9,465,787	9,879,075	19,344,862
Torrance	7,550,114	8,819,100	16,369,214	7,123,179	6,112,988	13,235,267
Whittier	392,721	408,825	801,546	382,812	381,843	764,655
Los Angeles City field	78,722,078 (1)	71,744,977 (1)	150,467,055 [2] 225,000	72,038,368 (1)	81,756,043 (1)	153,794,411 [2] 157,909
District No. 2:						
Bardsdale	177,612	186,346	363,958	177,466	186,769	364,235
Conejo	900	832	1,732	106	7,476	7,582
Ojai	41,204	39,827	81,031	37,149	36,305	73,454
Piru	59,545	65,360	124,905	61,546	64,611	126,157
Santa Paula	11,319	14,218	25,537	13,351	11,223	24,574
Sespe	20,531	25,321	45,852	25,802	22,875	48,677
Simi	34,293	31,520	65,813	29,796	28,375	58,171
South Mountain	683,179	719,855	1,403,034	760,556	729,695	1,490,251
Ventura	801,160	1,044,988	1,846,148	2,590,585	4,438,160	7,028,745
	1,829,743	2,128,267	3,958,010	3,696,357	5,525,489	9,221,846
District No. 3:						
Arroyo Grande	16,370	14,852	31,222	15,756	13,834	29,590
Casmalia	517,414	523,379	1,040,793	471,056	286,143	757,199
Cat Canyon	285,855	291,566	577,421	301,965	362,446	664,411
Half Moon Bay [3]	388	388	776	388	388	776
Lompoc	19,271	18,959	38,230	18,995	18,460	37,455
Moody Gulch	334	338	672	330	338	668
Santa Maria	606,821	589,716	1,196,537	562,750	573,365	1,136,115
Sargent	6,980	6,765	13,745	6,660	6,500	13,160
Summerland [3]	26,100	26,100	52,200	26,100	26,100	52,200
	1,479,533	1,472,063	2,951,596	1,404,000	1,287,574	2,691,574
District No. 4:						
Belridge-Lost Hills-Devils Den	636,062	330,100	966,162	887,262	827,733	1,714,995
Elk Hills	6,324,018	7,206,216	13,530,234	6,782,071	5,229,126	12,011,197
Kern River	3,306,720	3,212,311	6,519,031	3,100,983	2,627,218	5,728,201
McKittrick-Temblor	1,051,607	1,059,784	2,111,391	1,066,365	1,078,301	2,144,666
Midway-Sunset	17,858,958	19,837,369	37,696,327	18,633,659	18,269,215	36,902,874
Wheeler Ridge	161,910	190,350	352,260	174,740	176,069	350,809
	29,339,275	31,836,130	61,175,405	30,645,080	28,207,662	58,852,742
District No. 5: Coalinga	5,372,398	4,784,007	10,156,405	3,927,423	3,846,242	7,773,665
Grand total	(1)	(1)	228,933,471	(1)	(1)	232,492,147

[1] Semiannual figures for Los Angeles City field not available.
[2] Includes San Mateo County.
[3] Estimated.

Colorado.—The State produced 1,226,000 barrels of crude petroleum in 1925, as compared to 445,000 in 1924, a gain of 176 per cent. This increase was largely due to the drilling up and extension of fields proved in 1923 and 1924. No new oil fields were discovered in 1925, though the Tow Creek and Iles Dome fields discovered late in 1924 were not put on the list of producers until early in 1925.

Three completions each in the Fort Collins and Wellington fields accounted for most of the increase in the production of the State and served to considerably extend the productive area of those fields.

The old Florence and Rangely fields received considerable attention in 1925; the former was extended to the south, but the deep test wells in the latter found gas. Results in the Iles Dome were disappointing, for a deep test found water in the Dakota sand.

Petroleum produced in Colorado, 1916–1925, by districts

[Thousands of barrels of 42 U. S. gallons]

Year	Boulder	Florence	Fort Collins	Iles Dome	Moffat	Rangely	Other	Total
1916	6	191						197
1917	6	114					1	121
1918	4	135					4	143
1919	5	102				14		121
1920	7	88				16		111
1921	5	83				20		108
1922	4	70				23		97
1923	4	62				20		86
1924	4	70	86		256	29		445
1925	3	97	430	17	605	32	[1] 42	1,226

[1] Tow Creek.

Petroleum produced in Colorado, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1924															
Boulder	1	2	2	2	2	4	5	4	3	3	3	2	4	------	4
Rangely													29	------	29
Florence	4	6	5	5	5	5	7	7	7	6	6	5	68	2	70
Fort Collins	----	----	----	----	----	----	----	9	20	18	18	21	86	------	86
Moffat	----	----	----	----	----	----	35	64	46	38	37	27	247	9	256
	5	8	7	7	7	9	47	84	76	65	64	55	434	11	445
1925															
Boulder	2	3	1	4	4	3	3	3	3	3	3	3	3	------	3
Rangely													32	------	32
Florence	6	6	7	7	8	8	8	10	8	9	12	11	100	−3	97
Fort Collins	20	17	44	28	31	20	47	45	42	32	52	47	425	5	430
Iles Dome	----	----	----	----	----	----	3	3	2	2	2	5	17	------	17
Moffat	30	24	22	21	23	20	31	37	84	98	96	88	574	31	605
Tow Creek	----	3	6	4	4	4	----	----	----	----	----	----	21	21	42
	58	53	80	64	70	55	92	98	139	144	165	154	1,172	54	1,226

Kansas.—Kansas made a creditable record in 1925, when the decline in output was checked and a 33 per cent gain in production was made. The total production for 1925 was 38,357,000 barrels as compared with 28,836,000 barrels in 1924. This gain was the result of a greatly increased drilling program, nearly twice as many wells being completed in 1925 as in 1924. The outstanding pool of the year was the Rainbow Bend pool, which reached a peak of a little over 20,000 barrels in May. Considerable wild-catting was done in Kansas in 1925 with fairly good results. No spectacular gushers were completed, but a number of small pools were opened which gave every indication of being consistent producers.

Louisiana.—Production in Louisiana continued to decline in 1925, though to a lesser extent; the output of 20,272,000 barrels was but 4 per cent less than that of 1924. An increase in the Gulf coast area was more than balanced by the decrease in the northern part of the State.

The most important discovery of the year was the Urania field in La Salle Parish, where the first well was completed in March. The average depth of the wells in this field is about 1,500 feet, and the average daily production about 50 barrels of 20° A. P. I. gravity oil. Seven productive wells were completed in 1925 for a total of only 10,000 barrels. The field has proved to be of considerable size and is regarded as having great possibilities.

The most important event in respect to volume of production was the development of the Cotton Valley field, which recorded a 176 per cent gain. The peak, 328,000 barrels, reached in July was not sufficient, however, to surpass either Caddo or Haynesville for that month. At Caddo production was remarkably steady in 1925, but Haynesville recorded another large decrease.

Petroleum produced in Louisiana, 1916–1925, by districts

[Thousands of barrels of 42 U. S. gallons]

Year	Gulf coast (salt-dome pools)							Northern										Total for State
	Anse la Butte	Edgerley	Jennings	Lockport	Vinton	Other	Total	Bellevue	Caddo	Cotton Valley	De Soto	Elm Grove	Haynesville	Homer	Red River (Bull Bayou, Crichton)	Urania	Other	Total	
1916	13	1,252	517	----	1,640	4	3,426	----	5,464	----	1,657	----	------	------	4,691	--	10	11,822	15,248
1917	5	806	399	----	1,595	25	2,830	----	5,483	----	1,371	----	------	------	1,665	--	43	8,562	11,392
1918	[1] 3	512	369	----	1,839	15	2,738	----	11,144	----	1,066	----	------	------	1,046	--	49	13,305	16,043
1919	---	361	347	----	1,592	9	2,309	----	[1] 8,700	----	[1] 1,200	----	------	[1] 2,000	[1] 2,900	--	79	14,879	17,188
1920	---	379	232	----	1,333	3	1,947	----	6,336	----	(2)	----	------	21,508	[2] 5,923	--	--	33,767	35,714
1921	47	250	254	----	1,379	---	1,930	----	5,342	----	719	----	3,161	13,030	2,844	--	77	25,173	27,103
1922	36	125	191	----	1,395	---	1,747	1,050	4,498	----	531	160	19,939	5,673	1,778	--	--	33,629	35,376
1923	18	157	204	----	2,071	---	2,450	2,351	4,178	----	429	220	10,496	3,581	1,207	--	7	22,469	24,919
1924	12	166	213	128	1,968	---	2,487	1,749	4,319	1,211	353	217	6,720	2,837	1,231	--	--	18,637	21,124
1925	17	185	278	471	2,274	[3] 2	3,227	1,129	4,067	3,348	305	212	4,604	2,296	1,074	10	--	17,045	20,272

[1] Estimated. [2] De Soto included with Red River. [3] Welch.

Petroleum produced in Louisiana, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1924															
Gulf coast (salt-dome pools):															
Anse la Butte	1	1	2	1	1	1	1	1	----	1	1	1	12	----	12
Edgerley	13	8	10	6	12	12	14	11	11	19	15	17	148	18	166
Jennings	14	14	15	12	14	17	14	15	20	16	16	19	186	27	213
Lockport	----	----	----	----	----	----	----	----	30	37	24	18	109	19	128
Vinton	156	145	157	144	158	163	173	164	151	189	167	169	1,936	32	1,968
	184	168	184	163	185	193	202	191	212	262	223	224	2,391	96	2,487
Northern:															
Bellevue	183	158	173	172	188	159	148	138	133	133	112	101	1,798	−49	1,749
Caddo	309	297	326	374	443	406	382	372	363	356	336	344	4,308	11	4,319
Cotton Valley	1	8	15	28	33	48	122	174	172	189	246	158	1,194	17	1,211
De Soto	31	31	30	31	31	30	30	30	29	29	25	26	353	----	353
Elm Grove	18	20	20	20	19	18	19	18	18	17	16	15	218	−1	217
Haynesville	629	568	570	516	632	602	609	585	537	522	472	466	6,708	12	6,720
Homer	254	248	256	251	252	238	240	232	217	227	213	210	2,838	−1	2,837
Red River (Bull Bayou, Crichton)	110	101	111	104	107	105	103	103	98	99	94	99	1,234	−3	1,231
	1,535	1,431	1,501	1,496	1,705	1,606	1,653	1,652	1,567	1,572	1,514	1,419	18,651	−14	18,637
	1,719	1,599	1,685	1,659	1,890	1,799	1,855	1,843	1,779	1,834	1,737	1,643	21,042	82	21,124
1925															
Gulf coast (salt-dome pools):															
Anse la Butte [1]	1	1	1	2	2	2	2	2	1	1	1	1	17	2	19
Edgerley	12	14	14	17	17	12	18	16	16	15	12	12	175	10	185
Jennings	18	18	26	20	22	21	20	20	20	22	26	34	267	11	278
Lockport	10	----	----	----	----	----	----	----	58	122	129	100	419	52	471
Vinton	174	155	176	167	209	169	210	220	191	185	187	191	2,234	40	2,274
	215	188	217	206	250	204	250	258	286	345	355	338	3,112	115	3,227
Northern:															
Bellevue	125	117	131	132	88	86	87	88	80	72	60	65	1,131	−2	1,129
Caddo	337	317	354	342	356	340	338	349	331	338	329	343	4,074	−7	4,067
Cotton Valley	214	191	232	278	319	316	328	321	306	288	255	297	3,345	3	3,348
De Soto	29	26	27	27	26	26	26	25	23	24	25	25	309	−4	305
Elm Grove	15	14	16	15	17	22	20	21	19	18	18	19	214	−2	212
Haynesville	467	399	425	408	410	385	375	375	353	356	342	317	4,612	−8	4,604
Homer	211	191	210	198	201	188	195	188	181	184	177	178	2,302	−6	2,296
Red River (Bull Bayou, Crichton)	96	87	95	92	92	88	91	91	87	87	85	84	1,075	−1	1,074
Urania	----	----	----	----	----	----	----	----	1	2	2	2	7	3	10
	1,494	1,342	1,490	1,492	1,509	1,451	1,460	1,458	1,381	1,369	1,293	1,330	17,069	−24	17,045
	1,709	1,530	1,707	1,698	1,759	1,655	1,710	1,716	1,667	1,714	1,648	1,668	20,181	91	20,272

[1] Includes Welch.

Montana.—The history of production in Montana in 1925 is in reality the history of the Kevin-Sunburst field. Of the total output of the State in 1925, 4,091,000 barrels, this field yielded 2,780,000 barrels, or 68 per cent; the increase over the production in 1924 was 128 per cent, and the field passed Cat Creek to become the leading

field of the State. The shallowness of the wells (1,500 feet) and the easy drilling make Sunburst ideal for the small producer. In consequence the field was drilled rapidly in 1925, when 233 oil wells and 100 dry holes were completed in spite of poor market conditions.

Petroleum produced in Montana, 1916–1925, by districts

[Thousands of barrels of 42 U. S. gallons]

Year	Cat Creek	Elk Basin	Kevin-Sunburst	Lake Basin	Other	Total
1916		45				45
1917		100				100
1918		69				69
1919		90				90
1920	243	97				340
1921	1,408	75			26	1,509
1922	2,333	46	36		34	2,449
1923	2,227	28	523		4	2,782
1924	1,572	24	1,217		2	2,815
1925	1,255	21	2,780	31	4	4,091

Petroleum produced in Montana, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1924															
Cat Creek	147	135	142	134	130	131	125	130	120	126	123	117	1,560	12	1,572
Elk Basin	3	2	3	2	2	2	2	2	2	1	1	2	24		24
Kevin-Sunburst	1	6	27	130	132	110	120	150	170	145	115	102	1,208	9	1,217
Other														2	2
	151	143	172	266	264	243	247	282	292	272	239	221	2,792	23	2,815
1925															
Cat Creek	117	101	107	104	109	105	104	106	100	99	94	97	1,243	12	1,255
Elk Basin	1	1	2	2	2	2	2	2	2	1	2	2	21		21
Kevin-Sunburst	119	124	124	135	178	214	245	280	283	362	386	281	2,731	49	2,780
Lake Basin							9	12	2	1			24	7	31
Other														4	4
	237	226	233	241	289	321	360	400	387	463	482	380	4,019	72	4,091

New Mexico.—New Mexico in 1925 produced 1,060,000 barrels, as compared with only 98,000 barrels in 1924, and rose from seventeenth to sixteenth place. This large gain was due mainly to activity in the Artesia field in which 135 productive wells were completed during the year. Several wells were completed in the light-oil fields of San Juan County, namely, Rattlesnake, Hogback, and Bloomfield, though no attempt was made to rush the development of these fields. A new light-oil field was opened with the completion of a 300-barrel well on the Table Mesa structure.

Petroleum produced in New Mexico in 1925, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
Artesia	----	----	14	18	22	42	68	91	102	119	117	110	703	45	748
Hogback	14	10	15	16	18	15	16	16	17	17	16	17	187	----	187
Rattlesnake[1]	----	----	----	17	11	12	14	14	8	9	6	5	96	29	125
	14	10	29	51	51	69	98	121	127	145	139	132	986	74	1,060

[1] Includes Bloomfield.

Oklahoma.—Production in Oklahoma established a record in 1925 with 176,768,000 barrels, a gain over 1924 of a little more than 3,000,000 barrels. This record is surprising in view of the lack of spectacular developments like the discovery of the deep sands in the Tonkawa field in 1924.

Tonkawa was the leading producing field in 1925, with Burbank second. At the beginning of the year the development of the deep sands at Tonkawa had not been completed. Daily production from this field on January 1, 1925, was approximately 100,000 barrels, but was 40,000 barrels at the end of the year—a rather rapid decline. Production of the Burbank field, on the other hand, showed only a moderate decline and at the end of the year was higher than that of Tonkawa.

The most sensational development of the year was the discovery of the Wilcox deep sands in the Garber field in April, 1925. This field reached its peak in November at about 70,000 barrels and, until encroaching water cut down production, threatened to upset the market.

Wildcatting was active during 1925, with pools in the Wilcox sand as the main objectives. A number of these were opened, but almost without exception they were small. On the whole, the record production of the State in 1925 was obtained by exploiting deeper sands in proved fields rather than by discovering new fields.

Texas.—The production of crude petroleum in Texas in 1925 amounted to 144,648,000 barrels, an increase of roughly 10,000,000 barrels over 1924. The year 1925 was the fifteenth in succession to show an increase, consequently its production is the record for the State.

In Texas the producing fields are widely scattered and differ greatly in character. They are best described by major areas which are, for the purpose of this discussion, north central Texas, east and south central Texas, west Texas, and Gulf coast.

Production in north central Texas increased in 1925, primarily because of more drilling being done, but no new fields of much importance were discovered. Archer County, the chief producing area, led all the others in number of wildcat wells. As a result several new

shallow fields were discovered. Almost without exception these fields were small, but were profitable because of the shallow depth of the sands and the high grade of the oil.

Production in east and south central Texas, in the area between Corsicana and Laredo, decreased in 1925. Most of this decrease was in the Mexia-Powell-Wortham district, which experienced a natural decline. The feature of the work in this area was the discovery of the Lytton Springs field near Lockhart in March; this and the South Liberty pool were the important discoveries of the State in 1925. Lytton Springs exceeded expectations and produced 2,603,000 barrels of oil in 1925. This oil was obtained from serpentine, the chief cause of the pessimistic predictions. Wildcatting was extensive, particularly along the Balcones fault zone, centering in the areas northeast of Corsicana and east and northeast of Luling.

West Texas, including the Panhandle district, produced 10,843,000 barrels of oil in 1925 as against 1,742,000 barrels in 1924. Of the 1925 output the Big Lake field yielded 8,900,000 barrels and of course was the chief factor in the increase. The Panhandle produced 1,132,000 barrels in 1925, a sizable increase over 1924 but only a small fraction of the probable output in 1926. Wildcatting was widespread over west Texas in 1925 and constituted the most interesting feature of the year in Texas. In their search for another Big Lake the geologists of virtually all the large companies in Texas roamed over every county in west Texas and southeast New Mexico. That their search had little fruit in 1925 was due largely to the obscure geology of the area.

In the Texas Gulf coast field 1925 was a profitable year with respect to production, which had been declining. The increase of 3,803,000 barrels over 1924 resulted from the opening up of the South Liberty field (salt dome) the first of the year. This field, in contrast to most of those discovered recently, was held by many operators and in consequence the development was rapid; the production in 1925 was 4,416,000 barrels.

Use of the seismograph and torsion balance in 1925 resulted in the discovery of several new salt domes which would hardly have been found by other means. Of these the Boling and Piedras Pintas domes in Wharton and Duval Counties, respectively, made the best showing when tested by the drill.

Petroleum produced in Texas, 1916–1925, by districts

[Thousands of barrels of 42 U. S. gallons]

Year	Gulf coast (salt-dome pools)																			
	Batson	Benavides	Big Creek	Blue Ridge	Boling	Damon Mound	Dayton	Goose Creek	High Island	Hull	Humble	Markham	Orange	Pierce Junction	Saratoga	Sourlake	South Liberty	Spindletop	West Columbia	Other	Total
1916	745	------	------	------	------	------	9	397	------	------	10,926	157	18	------	781	4,923	------	341	------	45	18,342
1917	693	------	------	------	------	[1] 124	10	7,300	------	------	7,390	127	7	------	683	4,763	------	380	(1)	36	21,513
1918	635	------	------	------	------	[1] 283	9	[2] 8,944	------	245	6,555	65	------	------	722	3,408	------	557	(1)	47	21,470
1919	560	------	------	------	------	191	8	[2] 5,770	------	1,273	3,706	54	------	------	737	2,709	------	407	5,611	31	21,057
1920	527	------	------	92	------	379	17	[2] 4,476	------	3,909	3,607	57	------	------	849	2,024	------	322	9,459	17	25,735
1921	495	------	------	326	------	666	40	[2] 4,640	------	8,150	3,004	49	470	1,239	1,129	1,802	------	344	12,081	6	34,441
1922	434	------	(3)	349	------	754	29	[2] 4,766	------	6,546	2,284	35	5,345	1,020	713	1,675	------	289	11,126	5	35,370
1923	463	------	(3)	287	------	628	35	[2] 6,026	------	7,300	2,275	21	4,649	313	626	1,906	------	326	5,994	32	30,821
1924	464	------	293	278	------	520	36	[2] 3,967	------	7,074	2,224	66	3,958	154	543	1,588	------	359	4,536	22	26,082
1925	432	17	310	313	40	416	20	[2] 3,464	121	6,944	1,864	41	4,816	265	514	1,444	4,416	412	4,031	5	29,885

Year	Rest of State														Total for State
	East and south central Texas									North central Texas [4]	West Texas				
	Callihan	Corsicana, Currie, Mexia, Powell, Richland, Wortham	Luling	Lytton Springs	Somerset	Thrall-Minerva	Webb-Zapata-Jim Hogg	Other	Total		Big Lake	Panhandle	Westbrook	Total	Total
1916	------	361	------	------	------	433	------	65	859	8,444	------	------	------	------	9,303	**27,645**
1917	------	329	------	------	------	177	------	58	564	10,336	------	------	------	------	10,900	**32,413**
1918	------	313	------	------	------	137	------	48	498	16,782	------	------	------	------	17,280	**38,750**
1919	------	269	------	------	43	91	------	60	463	57,846	------	------	------	------	58,309	**79,366**
1920	------	297	------	------	162	60	------	51	570	70,563	------	------	------	------	71,133	**96,868**
1921	------	6,137	------	------	324	52	------	48	6,561	65,164	------	------	------	------	71,725	**106,166**
1922	------	34,790	------	------	672	37	733	35	36,267	47,037	------	------	10	10	83,314	**118,684**
1923	------	50,827	2,248	------	1,030	247	1,786	38	56,176	43,896	12	------	118	130	100,202	**131,023**
1924	187	49,272	11,134	------	1,109	235	2,215	59	64,211	42,487	1,056	272	414	1,742	108,440	**134,522**
1925	98	42,353	8,979	2,603	873	255	2,688	58	57,907	46,013	8,900	1,132	811	10,843	114,763	**144,648**

[1] Damon Mound includes West Columbia.
[2] Includes Barbers Hill.
[3] Included under "Other."
[4] Includes the districts in and between Wilbarger, Wichita, Clay, and Montague Counties on the north and Coleman, Brown, and Comanche Counties on the south.

Petroleum produced in coastal Texas salt-dome pools, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1924															
Batson	27	33	38	39	46	38	41	39	38	40	32	41	452	12	464
Big Creek										166	93	11	270	23	293
Blue Ridge	16	11	16	17	30	24	25	18	20	16	18	18	229	49	278
Damon Mound	41	38	42	39	41	41	40	35	35	34	35	29	450	70	520
Dayton	7	4	5	3	3	3	2	2	2	1	1	1	34	2	36
Goose Creek [1]	382	376	396	335	321	294	327	299	304	357	281	275	3,947	20	3,967
Hull	525	768	681	588	584	583	627	582	504	466	460	425	6,793	281	7,074
Humble	134	134	137	147	173	231	211	220	183	183	177	171	2,101	123	2,224
Markham	1	2	2	2	12	11	1	1	2	4	5	7	50	16	66
Orange	322	265	317	312	322	291	316	341	303	327	347	319	3,782	176	3,958
Pierce Junction	18	17	15	16	11	9	8	7	5	7	15	10	138	16	154
Saratoga	37	36	89	46	95	24	122	22	24	61	68	62	686	−143	543
Sourlake	136	129	137	128	133	126	133	129	121	120	106	108	1,506	82	1,588
Spindletop	26	25	27	27	27	28	28	29	30	39	34	37	357	2	359
West Columbia	393	359	379	342	340	339	361	365	486	431	367	364	4,526	10	4,536
Other		1	1	1			3		2	3	3	1	15	7	22
	2,065	2,198	2,282	2,042	2,138	2,042	2,245	2,089	2,059	2,255	2,042	1,879	25,336	746	26,082
1925															
Batson	36	32	40	37	36	37	33	44	36	40	26	24	421	11	432
Benavides			1				1				1	12	15	2	17
Big Creek	10	12	11	17	31	14	25	30	29	31	31	26	267	43	310
Blue Ridge	12	16	30	36	51	29	22	16	14	13	14	22	275	38	313
Boling												40	40		40
Damon Mound	38	29	32	31	30	34	30	30	31	29	26	27	367	49	416
Dayton	1	2	1	1	1	2	1	1	2	2	2	1	17	3	20
Goose Creek [1]	270	247	268	267	317	326	281	272	263	334	267	256	3,368	96	3,464
High Island	1		1	1	12	21	19	14	5	26	11	1	112	9	121
Hull	422	396	759	705	660	582	562	566	505	496	488	458	6,599	345	6,944
Humble	175	151	172	165	164	156	152	147	137	131	144	141	1,835	29	1,864
Markham	5	5	6	3	4	3	2	3	3	5	1	3	43	−2	41
Orange	270	261	313	382	402	368	525	440	440	457	390	437	4,685	131	4,816
Pierce Junction	33	22	17	15	13	13	11	10	20	14	24	50	242	23	265
Saratoga	23	29	42	49	26	28	28	26	79	26	24	23	403	111	514
Sourlake	114	114	126	115	118	121	119	122	113	119	116	106	1,403	41	1,444
South Liberty	8	7	243	351	636	506	575	439	459	389	308	278	4,199	217	4,416
Spindletop	32	29	36	37	37	33	34	33	34	33	36	35	409	3	412
West Columbia	359	331	359	337	346	335	321	323	304	292	295	271	3,873	158	4,031
Other														5	5
	1,809	1,683	2,457	2,549	2,884	2,608	2,741	2,516	2,474	2,437	2,204	2,211	28,573	1,312	29,885

[1] Includes Barbers Hill.

Petroleum produced in east and south central, north central, and west Texas, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1924															
East and south central Texas:															
Calliham	11	9	16	13	17	20	20	23	16	17	15	9	186	1	187
Corsicana, Currie, Mexia, Powell, Richland, Wortham	4,086	4,096	5,298	4,665	4,143	3,864	3,888	3,936	3,824	3,831	3,304	3,832	48,767	505	49,272
Luling	464	499	647	680	1,220	1,212	1,152	1,074	1,123	1,032	940	777	10,820	314	11,134
Somerset	100	92	100	91	98	91	94	89	87	88	86	88	1,104	5	1,109
Thrall-Minerva	19	16	19	19	20	20	21	20	21	21	19	19	234	1	235
Webb, Zapata, and Jim Hogg Counties	138	152	169	169	186	181	208	199	194	190	204	225	2,215		2,215
Other	4	4	3	4	5	3	8	6	6	5	6	5	59		59
	4,822	4,868	6,252	5,641	5,689	5,391	5,391	5,347	5,271	5,184	4,574	4,955	63,385	826	64,211
North central Texas	3,309	3,310	3,671	3,671	3,904	3,724	3,695	3,573	3,374	3,406	3,472	3,562	42,671	−184	42,487
West Texas:															
Big Lake	2	2	4	4	8	19	62	140	109	127	264	265	1,006	50	1,056
Panhandle						18	28	25	43	43	30	19	206	66	272
Westbrook	14	13	13	23	29	30	31	37	47	43	47	43	370	44	414
	16	15	17	27	37	67	121	202	199	213	341	327	1,582	160	1,742
	8,147	8,193	9,940	9,339	9,630	9,182	9,207	9,122	8,844	8,803	8,387	8,844	107,638	802	108,440

Petroleum produced in east and south central, north central, and west Texas, 1924–25, by districts and months—Continued

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties													Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year		
1925															
East and south central Texas:															
Calliham	10	12	9	8	9	7	10	8	5	7	8	5	98	----------	98
Corsicana, Currie, Mexia, Powell, Richland, Wortham	6,255	4,469	4,818	4,118	3,940	3,303	3,088	2,873	2,561	2,467	2,209	2,053	42,154	199	42,353
Luling	819	770	833	727	781	722	678	739	685	719	611	642	8,726	253	8,979
Lytton Springs	----------	----------	----------	53	239	359	336	380	335	314	283	279	2,578	25	2,603
Somerset	86	70	74	71	74	70	73	73	71	67	74	68	871	2	873
Thrall-Minerva	19	17	22	21	23	21	23	23	22	22	21	21	255	----------	255
Webb, Zapata, and Jim Hogg Counties	252	221	227	254	229	244	229	209	211	190	232	185	2,683	5	2,688
Other	5	5	5	5	4	5	4	4	4	4	4	3	52	6	58
	7,446	5,564	5,988	5,257	5,299	4,731	4,441	4,309	3,894	3,790	3,442	3,256	57,417	490	57,907
North central Texas	3,506	3,447	4,020	3,953	4,109	3,900	4,149	3,841	3,686	3,839	3,753	3,833	46,036	−23	46,013
West Texas:															
Big Lake	295	285	378	525	887	860	903	947	960	940	929	987	8,896	4	8,900
Panhandle	24	112	73	103	98	122	105	101	108	100	109	110	1,165	−33	1,132
Westbrook	50	43	52	44	58	63	67	89	73	75	78	89	781	30	811
	369	440	503	672	1,043	1,045	1,075	1,137	1,141	1,115	1,116	1,186	10,842	1	10,843
	11,321	9,451	10,511	9,882	10,451	9,676	9,665	9,287	8,721	8,744	8,311	8,275	114,295	468	114,763

Wyoming.—The chief oil-producing State of the Rocky Mountain area, Wyoming, yielded 29,173,000 barrels in 1925 as compared with 39,498,000 barrels in 1924, a decrease of 26 per cent. This unusual decline resulted from decreased output in the Salt Creek field, which produced 74 per cent of the total output of the State in 1925. The installation of electric pumping equipment in the Salt Creek field by the Midwest Refining Co. resulted in larger production of some wells but did not compensate for the natural decline of others. It is evident that no attempt was made to force production in this field in 1925, enough oil being produced to satisfy market demands. Several deep tests were drilled with the result that the Lakota and Sundance sands were proved over a considerable area, thus insuring production from this field for many years to come.

With a few exceptions the other fields of the State registered declines of output in 1925. Development work on Teapot Dome was at a standstill, pending the settlement of litigation. The only new discovery of importance was the one made by the Union Oil Co. on the Lake Creek structure in the Embar formation. As the black and heavy oil from this field is primarily a fuel oil, development work has been curtailed.

Petroleum produced in Wyoming, 1916–1925, by districts

[Thousands of barrels of 42 U. S. gallons]

Year	Big Muddy	Byron-Greybull-Torchlight	Elk Basin	Ferris	Grass Creek	Hamilton Dome-Warm Springs	Lance Creek	Lander-Dallas-Derby Dome	Lost Soldier
1916	[1]	140	721	----------	1,370	----------	----------	[2] 63	----------
1917	665	62	1,530	----------	2,756	----------	----------	[2] 50	----------
1918	3,082	45	1,067	----------	2,951	----------	----------	48	----------
1919	3,104	27	740	[3]	2,049	----------	461	62	[3] 167
1920	2,083	69	732	[3]	1,573	57	353	84	[3] 135
1921	1,927	80	681	[3]	1,435	67	346	119	[3] 524
1922	1,506	70	652	[3]	1,784	111	282	149	[3] 751
1923	1,527	57	634	[3]	1,589	216	363	137	[3] 1,551
1924	1,272	33	409	42	1,113	239	786	133	1,733
1925	1,223	30	314	33	1,240	264	360	152	1,713

Year	Mule Creek	Notches	Osage	Pilot Butte	Poison Spider-South Casper	Rex Lake	Rock Creek	Salt Creek	Teapot	Other	Total
1916	--------	--------	--------	[2]	--------	--------	--------	3,933	--------	7	6,234
1917	--------	--------	--------	[2]	--------	--------	--------	3,911	--------	4	8,978
1918	--------	--------	--------	62	--------	--------	--------	5,337	--------	4	12,596
1919	--------	--------	--------	91	--------	--------	242	6,225	--------	4	13,172
1920	182	--------	16	69	--------	--------	1,370	10,090	--------	18	16,831
1921	68	--------	176	46	--------	--------	1,681	12,172	--------	11	19,333
1922	168	--------	182	38	--------	--------	1,728	19,248	37	9	26,715
1923	--------	61	178	29	[1]	--------	1,429	35,770	1,156	88	44,785
1924	178	39	146	29	229	41	1,181	30,874	1,004	17	39,498
1925	129	35	109	25	297	20	1,087	21,445	632	65	29,173

[1] Included under "Other."
[2] Pilot Butte included with Lander-Dallas.
[3] Ferris included with Lost Soldier.

Petroleum produced in Wyoming, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

District	Petroleum transported from producing properties												Oil consumed on leases plus net change in producers' stocks, Jan. 1–Dec. 31	Production
	January	February	March	April	May	June	July	August	September	October	November	December	The year	
1924														
Big Muddy	97	115	100	96	110	104	112	118	112	114	102	94	1,274	−2	1,272
Elk Basin	40	40	41	40	38	36	35	34	28	30	27	23	412	−3	409
Ferris	4	5	4	3	1	2	3	3	2	2	3	4	36	6	42
Grass Creek	92	85	93	106	112	91	91	92	91	93	85	68	1,099	14	1,113
Hamilton Dome		29	17	31		27	19	45	18	21	10	17	234	5	239
Lance Creek	55	63	74	60	94	87	89	68	51	39	34	30	744	42	786
Lander-Dallas-Derby Dome	10	12	13	11	13	11	10	10	10	11	10	9	130	3	133
Lost Soldier	178	146	88	80	71	124	160	222	149	168	143	190	1,719	14	1,733
Mule Creek			7	43	37	27	25	22	20				181	−3	178
Notches						3	3		10	8			24	15	39
Osage	12	10	13	14	14	12	13	13	13	12	11	9	146		146
Pilot Butte	1	2	3	2	2	2	2	2	2	3	1	2	24	5	29
Poison Spider-South Casper	16	8	8	6	19	25	22	24	26	25	36	14	229		229
Rex Lake								26	4	1	2	1	34	7	41
Rock Creek	100	105	101	98	107	89	94	102	94	104	91	92	1,177	4	1,181
Salt Creek	3,510	3,076	2,980	3,202	2,815	2,667	2,697	2,614	2,273	2,043	1,715	1,538	31,130	−256	30,874
Teapot	123	108	106	94	87	83	75	69	75	66	57	61	1,004		1,004
Other	2	2	3	2	4	4	3	4	3	4	3	2	36	14	50
	4,240	3,806	3,651	3,888	3,524	3,394	3,453	3,468	2,981	2,744	2,330	2,154	39,633	−135	39,498
1925														
Big Muddy	98	90	103	97	103	104	107	107	105	105	98	103	1,220	3	1,223
Elk Basin	23	24	27	27	26	26	26	28	27	26	22	20	302	12	314
Grass Creek	32	79	130	129	137	130	145	119	96	87	80	82	1,246	−6	1,240
Hamilton Dome		44	17	17	21	30	11	14	18	33	28	26	259	5	264
Lance Creek	24	30	57	28	22	22	21	20	20	19	40	88	388	−28	360
Lander-Dallas-Derby Dome	10	11	12	13	12	11	11	13	14	12	11	13	143	9	152
Lost Soldier-Ferris	134	86	100	203	250	156	152	157	159	118	103	120	1,738	8	1,746
Mule Creek				22	33	23	23	20	3				124	5	129
Osage	9	10	12	10	11	10	10	6	5	5	9	10	107	2	109
Pilot Butte	1					5	9	2	2	1	1		21	4	25
Poison Spider-South Casper	33	11	11	14	22	25	34	40	28	31	26	24	299	−2	297
Rock Creek	94	86	96	91	94	87	93	85	86	92	92	87	1,083	4	1,087
Salt Creek	1,783	1,664	1,922	1,808	1,656	1,642	1,774	1,883	1,923	1,894	1,787	1,732	21,468	−23	21,445
Teapot	62	57	63	56	55	51	49	49	48	49	47	46	632		632
Other	4	4	5	3	8	14	22	9	6	17	15	17	124	26	150
	2,307	2,196	2,555	2,515	2,450	2,336	2,487	2,552	2,540	2,489	2,359	2,368	29,154	19	29,173

Other States.—The other States ranked as follows as producers of petroleum in 1925:

Petroleum produced in other States in 1925

[Thousands of barrels of 42 U. S. gallons]

State	Rank	Production	Percentage of increase or decrease from 1924	State	Rank	Production	Percentage of increase or decrease from 1924
Pennsylvania	8	8,097	+8.2	New York	14	1,695	+17.7
Illinois	9	7,863	−2.7	Indiana	17	829	−11.3
Ohio	10	7,212	+5.9	Tennessee	18	24	+140.0
Kentucky	11	6,759	−8.7	Michigan	21	4	
West Virginia	12	5,763	−2.7				

The total production of the nine States given above for 1925 was 38,246,000 barrels, a gain over 1924 of 156,000 barrels, making 1925 the first year since 1919 that production in these States has shown an increase. The increase was due to the greater number of wells drilled and to improvements in methods of recovery. The great influence of the latter is shown by the fact that of the seven leading States named above Pennsylvania, New York, and Ohio, or those States in which flooding or compressed air is most widely used, were the only ones to show a larger output than in 1924. Pennsylvania passed Illinois in the rank of producing States by virtue of a gain of 8 per cent.

Virtually all the recorded gain in output of Pennsylvania came from the Bradford district where a successful drilling campaign was conducted in 1925.

Considerable prospecting was done over the entire area, particularly in West Virginia and Tennessee, but very little production was developed. Only one field of importance, the Big Injun field in West Virginia, was discovered. The Tinsley Bottom field in Clay and Jackson Counties, Tenn., witnessed considerable development during 1925.

After years of fruitless endeavor Michigan reentered the ranks of the oil-producing States upon the completion at Saginaw of a 30-barrel flowing well. The oil had a gravity of 43° and was obtained from the Berea sandstone at about 1,800 feet. Because of the many previous disappointments, this well did not cause more than local excitement, and not until 1926 was enough development work done to prove the existence of a field.

Petroleum produced in Kentucky and Pennsylvania, 1923–1925, by counties, in barrels

County	1923	1924	1925	County	1923	1924	1925
KENTUCKY [1]				KENTUCKY—con.			
Allen	476,980	371,460	304,579	Wayne	142,168	126,139	134,142
Barren	81,046	108,457	253,561	Whitley	120		
Bath	17,131	17,685	16,805	Wolfe	67,440	57,557	52,538
Boyd	1,029	1,242	992		8,047,470	7,392,193	6,648,854
Clinton		1,363	11,031	Bureau of Mines	8,069,000	7,407,000	6,759,000
Cumberland	21,908	81,217	69,805				
Daviess			12,321	PENNSYLVANIA [2]			
Elliott	395	7,271	8,240				
Estill	588,642	498,957	436,483	Allegheny	561,398	467,265	453,648
Floyd	5,278	14,126	7,873	Armstrong	24,266	21,350	20,093
Hancock	31,398	36,657	33,578	Beaver	109,140	91,973	83,908
Hopkins	4,903	12,912	15,073	Butler	781,402	735,900	846,151
Jackson	1,896	582	583	Clarion	210,914	203,685	208,807
Johnson	1,015,006	1,178,675	1,026,322	Crawford	59,024	56,613	57,637
Knott	3,194	2,922	2,634	Elk	101,642	100,701	93,546
Lawrence	467,042	512,286	665,795	Forest	82,707	87,369	131,162
Lee	2,655,285	2,236,840	1,775,004	Greene	274,229	249,871	302,938
Lincoln	500	114	50	Jefferson	9,237	8,436	8,527
Logan	567		564	Lawrence	28,654	24,215	22,537
Magoffin	1,348,623	1,105,378	890,117	McKean	2,490,696	[3] 2,374,775	[3] 2,575,089
Martin	25	12	3	Mercer	13,643	13,503	13,804
McCreary	5,276	4,405	3,751	Potter	12,135	10,011	11,686
Menifee	5,683	3,156	1,936	Tioga	7,712	6,836	5,916
Monroe	10,819	48,491	22,621	Venango	1,304,206	1,236,568	1,184,221
Morgan	9,223	9,410	8,148	Warren	522,107	326,852	294,597
Ohio	9,789	78,631	165,040	Washington	474,765	478,483	455,554
Owsley	2,528	10,879	16,167	Westmoreland	215	257	186
Powell	282,393	264,483	212,582		7,068,092	[3] 6,494,663	[3] 6,770,007
Russell	6,828	9,409	1,917	Bureau of Mines	7,609,000	[3] 7,486,000	[3] 8,097,000
Simpson	22,319	11,252	8,953				
Warren	762,036	580,225	489,646				

[1] Kentucky State Tax Commission.
[2] Department of Internal Affairs, Pennsylvania.
[3] The figures of the Bureau of Mines for 1924 include 771,000 barrels reported for McKean County which is not included in the figures of the Pennsylvania Department of Internal Affairs; the difference in the totals for 1925 is largely for the same county.

WORLD'S PRODUCTION [1]

The world's production of crude petroleum in 1925 amounted to 1,067,761,000 barrels, an increase over 1924 of 53,601,000 barrels, or 5 per cent. Of this increase the United States accounted for nearly 50,000,000 barrels, which means that the production of the world, exclusive of the United States, increased only 3,798,000 barrels, or 1 per cent. In 1925 the United States produced 71.5 per cent of the total output of the world. Of the 10 leading producing nations all but Mexico and India showed increases. Venezuela made the most notable gain, more than doubling its output. However, the increases in production of the nations, exclusive of the United States, were nearly compensated by a decline of approximately 25,000,000 barrels in Mexico. Although this was the fourth successive year in which its output showed a decline, Mexico maintained its rank as second to the United States and still has a substantial lead over the third ranking country, Russia.

Mexico.—Low prices and uncertainty resulting from the enactment of new petroleum laws continued to keep development work in the Mexican fields at a low level. Most of the work in 1925 was confined to proved fields or to the drilling of semiwildcats in the endeavor to

[1] Tables compiled by L. M. Jones, of the Bureau of Mines.

connect these fields. Very few genuine wildcats were drilled and these with negligible results.

The major part of the decline in production was in what are called the northern or heavy-oil fields, of which Panuco and Ebano are the most important. Despite this decline, however, these fields produced more than twice as much as the southern or light-oil fields. The most noteworthy development was in the Ebano section along the line of the National Railway. A few large wells reminiscent of the gusher days of 1921 and 1922 were completed in the southern fields.

Russia.—Despite the dearth of reliable reports from Russia, it is certain that considerable progress was made during 1925. Production increased 16 per cent, reaching the highest point since 1917. Much of this increase was due to the introduction of modern equipment. Some advance was made in pipe-line construction and in widening both foreign and domestic markets.

Persia.—Production of crude petroleum continued to show its steady annual increase. No decline in yearly output has been reported since commercial production began in 1913. The potential production of the country still exceeds the transportation facilities.

Venezuela.—The production of crude petroleum in Venezuela in 1925 amounted to 19,687,000 barrels, an increase over 1924 of 118 per cent. This remarkable progress resulted from active and uniformly successful drilling in the vicinity of Lake Maracaibo. Because of development work in La Rosa field and the discovery of the Ambrosia field, 6 miles to the north, the production of this area displaced the Mene Grande field in importance.

World's production of crude petroleum,

[Thousands of barrels

Year	Rumania	United States	Italy	Canada	Russia	Poland (Galicia)	Japan and Taiwan	Germany	India	Dutch East Indies	Peru	Mexico	Argentina
1857–60	19	502	(1)										
1861	17	2,114	(1)										
1862	23	3,057	(1)	12									
1863	28	2,611	(1)	83	41								
1864	33	2,116	(1)	90	65								
1865	39	2,498	2	110	67								
1866	42	3,598	1	175	83								
1867	51	3,347	1	190	120								
1868	56	3,646	(1)	200	88								
1869	59	4,215	(1)	220	202								
1870	84	5,261	(1)	250	204								
1871	90	5,205	(1)	270	165								
1872	91	6,293	(1)	308	185								
1873	104	9,894	(1)	365	475								
1874	103	10,927	1	169	583	150							
1875	108	8,788	1	220	697	158	5						
1876	111	9,133	3	312	1,321	164	7						
1877	108	13,350	3	312	1,801	170	10						
1878	109	15,397	4	312	2,401	176	18						
1879	110	19,914	3	575	2,761	215	23						
1880	115	26,286	2	350	3,001	229	26	9					
1881	122	27,661	1	275	3,601	287	17	29					
1882	136	30,350	2	275	4,538	330	15	58					
1883	139	23,450	2	250	6,002	365	20	27					
1884	211	24,218	3	250	10,805	408	28	46					
1885	193	21,859	2	250	13,925	465	30	41					
1886	168	28,065	2	584	18,006	306	38	74					
1887	182	28,283	1	526	18,368	344	29	74					
1888	219	27,612	1	695	23,049	467	37	85					
1889	298	35,164	1	705	24,639	515	53	68	94				
1890	383	45,824	3	795	28,691	659	52	108	118				
1891	488	54,293	8	755	34,573	631	53	109	190				
1892	593	50,515	18	780	35,775	646	69	101	242				
1893	535	48,431	19	798	40,457	693	106	100	299	600			
1894	508	49,344	21	829	36,375	949	173	123	327	688			
1895	576	52,892	26	726	46,140	1,453	170	121	372	1,216			
1896	543	60,960	18	727	47,221	2,444	237	145	430	1,427	47		
1897	571	60,476	14	710	54,399	2,226	262	166	546	2,552	71		
1898	776	55,364	15	758	61,610	2,376	319	184	542	2,964	71		
1899	1,426	57,071	16	808	65,955	2,314	539	192	941	1,796	89		
1900	1,629	63,621	12	913	75,780	2,347	871	358	1,079	2,253	274		
1901	1,678	69,389	16	757	85,168	3,251	1,117	314	1,431	4,014	275	10	
1902	2,060	88,767	19	531	80,540	4,142	996	354	1,617	2,430	287	40	
1903	2,763	100,461	18	487	75,591	5,235	1,209	446	2,510	5,770	278	75	
1904	3,599	117,081	26	553	78,537	5,947	1,219	637	3,385	6,508	290	126	
1905	4,421	134,717	44	634	54,960	5,766	1,347	561	4,137	7,850	373	251	
1906	6,378	126,494	54	569	58,897	5,468	1,564	579	4,016	8,181	531	502	
1907	8,118	166,095	60	789	61,851	8,456	1,718	757	4,344	9,983	751	1,005	(1)
1908	8,252	178,527	51	528	62,187	12,612	1,871	1,009	5,047	10,283	945	3,933	12
1909	9,327	183,171	42	421	65,970	14,933	1,887	1,019	6,677	11,042	1,411	2,714	18
1910	9,724	209,557	51	316	70,337	12,673	1,829	1,032	6,138	11,031	1,258	3,634	20
1911	11,108	220,449	75	291	66,184	10,519	1,737	1,017	6,451	12,173	1,465	12,553	13
1912	12,976	222,935	54	243	68,019	8,535	1,659	1,031	7,117	10,846	1,752	16,558	47
1913	13,555	248,446	47	228	62,834	7,818	1,940	857	7,930	11,172	2,071	25,696	131
1914	12,827	265,763	40	215	67,020	6,436	2,636	781	7,410	11,422	1,837	26,235	276
1915	12,030	281,104	44	215	68,548	5,352	2,928	703	8,202	11,920	2,579	32,911	513
1916	8,945	300,767	51	198	65,817	6,587	2,963	656	8,491	12,547	2,593	40,546	867
1917	3,721	335,316	41	214	63,072	6,228	2,861	642	8,079	13,180	2,577	55,293	1,218
1918	8,730	355,928	35	305	27,168	6,032	2,441	270	8,188	12,778	2,527	63,828	1,353
1919	6,618	378,367	35	241	31,752	6,096	2,238	265	8,736	15,508	2,628	87,073	1,331
1920	7,435	442,929	35	196	25,430	5,607	2,221	246	8,375	17,529	2,817	157,069	1,651
1921	8,368	472,183	32	188	28,968	5,167	2,233	274	8,734	16,958	3,699	193,398	2,036
1922	9,843	557,531	31	179	35,692	5,227	2,055	319	8,529	17,066	5,314	182,278	2,866
1923	10,867	732,407	34	170	39,147	5,402	1,804	346	8,406	19,870	5,099	149,585	3,400
1924	13,369	713,940	45	161	45,355	5,657	1,814	406	8,416	20,473	8,379	139,678	4,639
1925	16,646	763,743	70	332	52,448	5,960	2,000	541	8,000	21,422	9,252	115,515	5,997
	224,554	8,669,672	1,256	25,893	2,105,631	196,593	51,494	17,280	165,546	315,452	62,140	1,310,506	26,388

[1] Less than one thousand. [2] Estimated. [3] Cuba.

1857–1925, by years and countries

of 42 U. S. gallons]

Trinidad	Egypt	Persia	Sarawak	Algeria	Venezuela	France	England	Czechoslovakia	Colombia	Other countries	Total	Percentage produced by United States
											521	96
											2,131	99
											3,092	99
											2,763	94
											2,304	92
											2,716	92
											3,899	92
											3,709	90
											3,990	91
											4,696	90
											5,799	91
											5,730	91
											6,877	92
											10,838	91
											11,933	92
											9,977	88
											11,051	83
											15,754	85
											18,417	84
											23,601	84
											30,018	88
											31,993	86
											35,704	85
											30,255	78
											35,969	67
											36,765	59
											47,243	59
											47,807	59
											52,165	53
											61,507	57
											76,633	60
											91,100	60
											88,739	57
											92,038	53
											89,337	55
											103,692	51
											114,199	53
											121,993	50
											124,979	44
											131,147	44
											149,137	43
										[2] 20	167,440	41
										[2] 26	181,809	49
										[2] 36	194,879	52
										[2] 40	217,948	54
										[2] 30	215,091	63
										[2] 30	213,263	59
										[2] 30	263,957	63
[1]										[2] 30	235,287	63
57										[2] 20	298,709	61
143										[2] 20	327,763	64
285	21									[2] 20	344,361	64
437	214									[2] 20	352,443	63
504	98	1,857	141							[2] 20	385,345	64
644	753	2,910	318	1						[2] 20	407,544	65
750	212	3,616	392	4						[2] 10	432,033	65
929	404	4,477	629	8						[2] 25	457,500	66
1,602	943	7,147	542	9	120					[3] 19	502,824	67
2,082	1,935	8,623	504	7	333	[4] 363					503,430	[5]
1,841	1,517	10,139	596	5	425	334	2	48			555,795	66
2,083	1,042	12,230	1,020	4	457	356	3	69			688,804	64
2,354	1,255	16,673	1,411	3	1,433	389	3	94		[6] 50	765,903	62
2,445	1,188	22,247	2,849	9	2,201	496	1	120	323	[3] 100	858,909	65
3,051	1,054	25,230	3,940	9	4,201	494	1	74	424	[2] 112	1,015,727	72
4,057	1,122	32,373	4,163	11	9,042	426	2	76	445	[3] 111	1,014,160	70
4,387	1,226	35,038	4,257	12	19,687	459	2	76	581	[2] 110	1,067,761	72
27,651	12,984	182,560	20,762	82	37,899	3,317	14	557	1,773	99	13,460,903	64

[1] Production in previous years credited to Germany.

[6] Ecuador.

World's production of petroleum, 1924–25, by countries

Country	1924				1925			
	Thousands of barrels of 42 U. S. gallons	Thousands of metric tons	Thousands of cubic meters	Percentage of total by volume	Thousands of barrels of 42 U. S. gallons	Thousands of metric tons	Thousands of cubic meters	Percentage of total by volume
United States	713,940	98,024	113,504	70.4	763,743	104,622	121,422	71.5
Mexico	139,678	21,367	22,206	13.8	115,515	17,626	18,365	10.8
Russia	45,355	6,301	7,211	4.5	52,448	7,295	8,338	4.9
Persia	32,373	4,313	5,147	3.2	35,038	4,652	5,571	3.3
Dutch East Indies	20,473	2,926	3,255	2.0	21,422	3,066	3,406	2.0
Venezuela	9,042	1,335	1,438	.9	19,687	2,884	3,130	1.8
Rumania	13,369	1,860	2,125	1.3	16,646	2,317	2,646	1.6
Peru	8,379	1,046	1,332	.8	9,252	1,220	1,471	.9
India	8,416	1,182	1,338	.8	8,000	1,100	1,300	.8
Argentina	4,639	677	738	.4	5,997	874	953	.6
Poland	5,657	771	899	.6	5,960	812	948	.5
Trinidad	4,057	564	645	.4	4,387	610	697	.4
British Borneo (Sarawak)	4,163	599	662	.4	4,257	613	678	.4
Japan and Taiwan	1,814	252	288	.2	2,000	280	300	.2
Egypt	1,122	163	178	.1	1,226	179	195	.1
Colombia	445	64	71		581	83	92	
Germany	406	59	65		541	79	86	
France	426	61	68		459	66	73	
Canada	161	22	26		332	43	53	
Czechoslovakia	76	11	12		76	11	12	
Italy	45	5	7	.2	70	8	11	.2
Algeria	11				12			
Barbados	10				9			
Cuba	4	18	20		4	18	20	
England	2				2			
Other countries	[1] 97				[1] 97			
	1,014,160	141,620	161,235	100.0	1,067,761	148,458	169,767	100.0

[1] Estimated.

PRODUCTION OF PETROLEUM IN FOREIGN COUNTRIES IN 1925, BY FIELDS

Petroleum produced in Mexico in 1925, by fields

Field	Barrels	Field	Barrels
Heavy oil:		Light oil—Continued.	
Ebano	15,534,514	Filisola	239,435
El Limon	402,761	Furbero	152,180
Panuco—		Isleta de Capoacan	6,145
Cacalilao	40,337,946	Ixhuatlan	1,151
Other	20,811,384	La Labor	1,246
San Jeronimo	270,344	Potrero del Llano	1,031,472
Topila	1,073,577	Sarlat	50
	78,430,526	Tepetate, Chinampa, Amatlan, Zacamixtle	9,254,854
Light oil:		Tierra Amarilla	59,227
Alazan	313,959	Tierra Blanca, Chapapote, Alamo	14,168,898
Cerro Viejo	1,270,530	Toteco, Cerro Azul	10,170,226
Chiconcillo y San Miguel	244,914		37,084,174
Concepcion	5,793		
Dos Bocas	164,094		115,514,700

Petroleum produced in Russia in 1925, by fields

Field	Metric tons	Barrels
Baku:		
Balakhani	660, 082	4, 469, 415
Bibi-Eibat	1, 184, 071	8, 577, 410
Binagadi	318, 936	2, 188, 220
Ramani	666, 373	4, 917, 833
Sabunchi	1, 142, 884	7, 954, 473
Surakhani	894, 140	7, 134, 343
Undistributed	73, 564	515, 095
	4, 940, 050	35, 756, 789
Emba-Ural	202, 312	1, 366, 820
Ferghana	4, 359	31, 943
Grozny	2, 074, 479	14, 786, 886
Kuban-Black Sea	73, 801	505, 168
	7, 295, 001	52, 447, 606

Petroleum produced in Dutch East Indies in 1925, by fields

Field	Metric tons	Barrels
Borneo	2, 169, 453	14, 667, 672
Ceram	42, 980	298, 711
Java	244, 617	1, 772, 006
Sumatra	609, 111	4, 684, 064
	3, 066, 161	21, 422, 453

Petroleum produced in Venezuela in 1925, by fields

Field	Metric tons	Barrels
El Mene	356, 780	2, 649, 805
La Concepcion	35, 171	250, 523
La Paz	40, 216	273, 388
La Rosa	1, 485, 141	10, 110, 840
Mene Grande	964, 163	6, 381, 795
Rio Tarra	3, 016	21, 055
	2, 884, 487	19, 687, 406

Petroleum produced in Rumania in 1925, by fields

Field	Metric tons	Barrels
Bacau	50, 281	361, 319
Buzau	115, 206	827, 870
Dambovitza	301, 703	2, 168, 038
Maramures	60	431
Prahova	1, 849, 254	13, 288, 739
	2, 316, 504	16, 646, 397

Petroleum produced in Peru in 1925, by fields

Field	Metric tons	Barrels
La Brea-Pariñas	983, 806	7, 457, 249
Lobitos	169, 123	1, 287, 195
Restin	58, 197	439, 911
Zorritos	8, 828	67, 375
	1, 219, 954	9, 251, 730

Petroleum produced in Argentina in 1925, by fields

Field	Metric tons	Barrels
Chubut: Comodoro Rivadavia	858,473	5,880,540
Neuquen: Plaza Huincul	15,841	116,907
	874,314	5,997,447

Petroleum produced in Poland in 1925, by fields

Field	Metric tons	Barrels
Cracow	137	1,016
Drohobycz	697,352	5,110,195
Jaslo	64,632	479,376
Stanislaw	49,789	369,285
	811,910	5,959,872

Petroleum produced in Italy in 1925, by fields

Field	Metric tons	Barrels
Abruzzi: Chieti	18	113
Emilia:		
Parma	1,761	16,575
Pavia	10	90
Piacenza	4,791	45,093
Valle Latina: Caserta	1,316	8,296
	7,896	70,167

IMPORTS AND EXPORTS

The statistics of imports and exports and of shipments to Territories, given in this report, unless otherwise specified, have been compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce. Data for refined products of petroleum are given with refinery statistics on page 378.

Imports and exports of crude petroleum, including exports of foreign petroleum, in 1925 amounted to approximately 61,824,000 and 13,335,000 barrels, respectively, both decreases from 1924. In addition, about 1,500 barrels were shipped to the noncontiguous Territories, Alaska, Hawaii, and Porto Rico. Mexico contributed 89 per cent of the 1925 imports as compared to 95 per cent in 1924. Because of larger production in Venezuela, imports from that country increased 296 per cent to a total of 4,692,000 barrels in 1925. Canada continued as the chief importer of crude petroleum from the United States. Mexico still continued to import petroleum from California, though the total for 1925 was less than in 1924.

Crude petroleum imported, exported, and shipped to Territories, 1921–1925

[Barrels of 42 U. S. gallons]

Year	Imports		Exports (including foreign crude oil)		Shipments from United States to Territories						Total of exports and shipments to Territories
					Alaska		Hawaii		Porto Rico		
	Barrels	Value	Barrels	Value	Barrels	Value	Barrels	Value	Barrels	Value	Barrels
1921	125,363,983	$66,547,379	8,939,633	$20,261,898	-----	-----	687,173	$1,393,831	6	$50	9,626,812
1922	127,308,423	70,383,309	10,162,817	18,422,231	-----	-----	641,721	1,060,445	233	1,343	10,804,771
1923	82,015,025	53,882,259	17,385,378	23,262,190	2,741	$13,713	146,482	161,193	-----	-----	17,534,601
1924	77,775,173	73,841,507	17,972,539	26,660,412	204	1,008	265,600	275,600	179	1,060	18,238,522
1925	61,824,242	75,406,956	13,335,107	24,369,277	124	232	1,429	7,200	-----	-----	13,336,660

Crude petroleum imported and exported, 1924–25, by months

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year	
													Thousands of barrels	Value (thousands of dollars)
1924														
Imports:														
By countries—														
Mexico	6,248	6,511	8,315	6,988	6,718	6,206	5,900	5,324	4,902	4,653	6,373	5,841	73,979	66,573
Peru	-----	-----	238	193	615	331	338	358	217	-----	139	-----	2,429	5,624
Venezuela [1]	55	-----	78	55	60	63	264	80	235	219	77	-----	1,186	1,509
Other countries	-----	-----	-----	61	-----	60	-----	-----	-----	-----	60	-----	181	136
	6,303	6,511	8,631	7,297	7,393	6,660	6,502	5,762	5,354	4,872	6,649	5,841	77,775	73,842
By ports of entry—														
Atlantic coast	2,861	2,679	4,132	3,876	4,415	3,622	3,905	2,770	2,517	2,433	4,191	3,534	40,935	42,119
Gulf coast	3,442	3,832	4,499	3,421	2,978	3,038	2,597	2,992	2,837	2,439	2,458	2,307	36,840	31,723
	6,303	6,511	8,631	7,297	7,393	6,660	6,502	5,762	5,354	4,872	6,649	5,841	77,775	73,842
Exports:														
By countries—														
Domestic crude oil—														
Argentina	100	103	-----	90	166	87	-----	105	225	187	110	68	1,241	1,320
Canada	678	917	973	1,242	1,195	1,125	813	907	859	887	910	486	10,992	16,484
Cuba	148	53	107	124	72	109	53	105	53	106	54	152	1,136	3,002
Dutch West Indies	73	-----	-----	-----	-----	-----	-----	-----	53	-----	-----	-----	126	317
England	-----	50	80	1	-----	-----	154	-----	128	42	-----	65	520	772
Germany	-----	93	-----	-----	81	-----	-----	-----	67	22	20	68	351	809
Italy	-----	67	-----	-----	-----	-----	-----	23	-----	-----	29	-----	119	240
Japan	65	63	63	56	62	192	62	-----	75	129	70	-----	837	1,131
Mexico	414	268	194	7	246	4	287	65	141	3	131	124	1,884	1,768
Other countries	2	37	33	-----	1	-----	-----	-----	214	-----	112	-----	399	652
Foreign crude oil	48	29	35	27	27	25	40	37	20	47	17	16	368	165
	1,528	1,680	1,485	1,547	1,850	1,542	1,409	1,242	1,835	1,423	1,453	979	17,973	26,660
By ports—														
Atlantic coast	1	-----	-----	1	1	-----	-----	10	20	20	20	-----	73	131
Gulf coast	399	478	211	197	367	109	208	192	657	172	281	356	3,627	7,691
Mexican border	48	33	37	32	30	29	40	37	35	47	17	16	401	189
Northern border	465	472	679	695	806	683	684	575	698	508	643	322	7,230	11,689
Pacific coast	615	697	558	622	646	721	477	428	425	676	492	285	6,642	6,960
	1,528	1,680	1,485	1,547	1,850	1,542	1,409	1,242	1,835	1,423	1,453	979	17,973	26,660
Excess of imports over exports	4,775	4,831	7,146	5,750	5,543	5,118	5,093	4,520	3,519	3,449	5,196	4,862	59,802	47,182

[1] Recorded by Bureau of Foreign and Domestic Commerce as Dutch West Indies in 1924; as Dutch West Indies and Venezuela in 1925.

Crude petroleum imported and exported, 1924–25, by months—Continued

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year: Thousands of barrels	The year: Value (thousands of dollars)
1925														
Imports:														
By countries—														
Mexico	6,461	4,951	5,992	4,755	6,083	4,898	3,780	3,638	3,522	4,079	3,599	3,291	55,049	64,645
Peru	211	406	81	210	-----	139	-----	139	-----	-----	371	268	1,825	4,159
Venezuela [1]	353	222	242	517	263	116	375	208	505	288	921	682	4,692	6,325
Other countries	-----	-----	60	-----	138	-----	-----	60	-----	-----	-----	-----	258	278
	7,025	5,579	6,375	5,482	6,484	5,153	4,155	4,045	4,027	4,367	4,891	4,241	61,824	75,407
By ports of entry—														
Atlantic coast	4,217	3,585	3,723	3,251	3,368	2,909	2,548	2,175	2,001	2,802	3,328	3,333	37,240	46,671
Gulf coast	2,808	1,994	2,651	2,231	3,113	2,244	1,607	1,870	2,026	1,565	1,563	908	24,580	28,715
Northern border	-----	-----	1	-----	3	-----	-----	-----	-----	-----	-----	-----	4	21
	7,025	5,579	6,375	5,482	6,484	5,153	4,155	4,045	4,027	4,367	4,891	4,241	61,824	75,407
Exports:														
By countries—														
Domestic crude oil—														
Canada	653	546	766	626	642	810	884	1,111	586	1,026	508	758	8,916	16,429
Cuba	80	168	61	78	117	106	53	53	53	53	53	53	928	2,745
Germany	91	145	68	-----	-----	19	68	-----	23	-----	134	-----	548	907
Italy	34	-----	38	-----	-----	-----	-----	53	-----	-----	40	-----	165	482
Japan	56	65	-----	70	104	55	70	166	70	122	-----	58	836	1,189
Mexico	160	126	105	1	353	190	129	13	24	15	2	1	1,119	1,338
United Kingdom	60	-----	-----	-----	61	-----	-----	-----	-----	24	-----	-----	145	300
Other countries	-----	62	-----	-----	53	57	66	50	135	38	-----	7	468	885
Foreign crude oil	15	10	20	23	26	18	32	19	32	12	3	-----	210	94
	1,149	1,122	1,058	798	1,356	1,255	1,302	1,465	923	1,290	740	877	13,335	24,369
By ports—														
Atlantic coast	-----	5	-----	-----	-----	-----	-----	103	1	-----	40	6	155	433
Gulf coast	364	314	168	79	689	388	349	156	131	120	188	56	3,002	6,117
Mexican border	15	10	20	23	26	23	32	24	32	22	4	-----	231	106
Northern border	531	472	651	534	537	584	640	822	526	642	468	589	6,996	13,634
Pacific coast	239	321	219	162	104	260	281	360	233	506	40	226	2,951	4,079
	1,149	1,122	1,058	798	1,356	1,255	1,302	1,465	923	1,290	740	877	13,335	24,369
Excess of imports over exports	5,876	4,457	5,317	4,684	5,128	3,898	2,853	2,580	3,104	3,077	4,151	3,364	48,489	51,038

[1] Recorded by Bureau of Foreign and Domestic Commerce as Dutch West Indies in 1924; as Dutch West Indies and Venezuela in 1925.

SHIPMENTS TO NONCONTIGUOUS TERRITORIES

Crude petroleum shipped to noncontiguous territories, 1924–25, by months

[Barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1924													
Alaska	-----	179	-----	-----	-----	-----	-----	25	-----	-----	-----	-----	204
Hawaii	-----	-----	65,000	-----	7,600	-----	-----	-----	58,000	65,000	-----	70,000	265,600
Porto Rico	-----	36	-----	-----	-----	-----	143	-----	-----	-----	-----	-----	179
	-----	215	65,000	-----	7,600	-----	143	25	58,000	65,000	-----	70,000	265,983
1925													
Alaska	-----	-----	-----	71	-----	-----	53	-----	-----	-----	-----	-----	124
Hawaii	-----	-----	-----	-----	-----	-----	-----	-----	-----	1,429	-----	-----	1,429
	-----	-----	-----	71	-----	-----	53	-----	-----	1,429	-----	-----	1,553

SHIPMENTS FROM CALIFORNIA THROUGH PANAMA CANAL

Shipments of California crude oil through the Panama Canal to eastern ports in the United States, which were a decidedly important phase of the industry in 1923, dropped in 1925, when only 14,545,000 barrels went through the canal as compared with 39,300,000 barrels in 1924 and 52,350,000 barrels in 1923. This drop in only two years resulted from the expiration of contracts made to take advantage of the low prices of the over-production period of 1923, and from the increased demands of California refineries. Crude production in California in 1925 increased only 2 per cent over 1924 as compared with an increase in runs to stills in the State of 23 per cent. A tendency to refine the oil before shipment is evidenced by the 164 per cent increase in shipments of refined oil in 1925. Eastward shipments of refined oil through the Panama Canal in 1925 nearly equaled shipments of crude and gave every indication of surpassing them in 1926.

California oil shipped through Panama Canal to eastern ports in the United States, 1924–25, by months [1]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1924													
Crude oil:													
Thousands of long tons	692	634	608	403	497	444	393	347	487	336	286	331	5,458
Thousands of barrels (approx.)	4,986	4,567	4,378	2,899	3,581	3,195	2,826	2,499	3,505	2,422	2,058	2,384	39,300
Refined products (thousands of barrels) (approx.):													
Gasoline, naphtha, etc	372	174	173	302	333	111	150	272	-----	467	85	257	2,696
Fuel oil	-----	-----	66	-----	-----	66	76	575	163	-----	-----	-----	946
Lubricating oil	-----	138	-----	68	-----	65	70	-----	70	40	69	39	559
Tops [1]	-----	74	-----	82	-----	83	81	245	82	-----	83	384	[2] 1,114
Total refined products	372	386	239	452	333	325	377	1,092	315	507	237	680	5,315
1925													
Crude oil:													
Thousands of long tons	189	224	211	262	185	152	133	178	136	70	93	187	2,020
Thousands of barrels (approx.)	1,363	1,614	1,522	1,883	1,331	1,092	958	1,283	981	503	666	1,349	14,545
Refined products (thousands of barrels) (approx.):													
Gasoline, naphtha, etc	297	283	1,145	817	557	1,367	1,496	1,118	553	689	998	960	10,280
Gas oil	-----	88	-----	186	-----	87	-----	-----	-----	68	76	323	828
Fuel oil	-----	-----	64	-----	-----	-----	-----	-----	-----	75	284	398	821
Lubricating oil	68	-----	65	-----	67	-----	123	68	-----	67	-----	68	526
Tops	178	265	189	70	-----	85	355	76	96	83	94	86	1,577
Total refined products	543	636	1,463	1,073	624	1,539	1,974	1,262	649	982	1,452	1,835	14,032

[1] From Panama Canal Record.

[2] Includes 327,000 barrels unclassified.

STOCKS

In this report stocks of crude petroleum are classified as follows:

1. Refinery stocks, or stocks held at refineries. For 1925 these stocks are for east of California only. Data concerning stocks of petroleum held by other consumers are not available.

2. Pipe-line and tank-farm stocks, or petroleum that has been transported from the producing properties but has not been delivered at refineries or other points of consumption. For the States east of California such stocks are reported monthly as gross stocks, which

include the total contents of tanks and pipe lines and as net stocks which are gross stocks minus sediment and water. The stocks reported for California for 1924 were compiled by the Pacific coast office of the American Petroleum Institute and include producers', pipe-line, and tank-farm stocks of crude oil, residuum, and tops. The stocks reported for California for 1925 were compiled by the San Francisco office of the Bureau of Mines and include all stocks of crude petroleum and fuel oil held on the Pacific coast, divided into two classes—light or refinable crude and heavy crude and fuel oil.

3. Producers' stocks, or petroleum held at the wells on the producing properties. Producers' stocks are reported annually and, in the last five years, have amounted to between 5 and 10 million barrels.

4. Stocks of foreign crude petroleum held by importers elsewhere than at refineries.

The tendency to draw on reserves of crude petroleum, which became noticeable in 1924, was more evident in 1925 when 18,000,000 barrels were withdrawn from stocks as compared to additions of 20,000,000 barrels in 1924 (California stocks of heavy crude and fuel oil omitted). Virtually all of the decrease in 1925 was in tank-farm stocks of the Mid-Continent field. Stocks on hand at the end of 1925 were lower than those at the end of May, a condition that has not existed since 1919. This does not indicate an impending shortage but rather a better balance between supply and demand than was maintained in the overproduction period of 1923 and 1924.

Stocks of crude petroleum in the United States on December 31, 1922–1925

[Thousands of barrels of 42 U. S. gallons]

Year	Refinery stocks of crude petroleum	Pipe-line and tank-farm stocks of domestic crude petroleum, by fields of origin								Producers' stocks [2]	Foreign petroleum held by importers	Total
		Appalachian	Lima-Indiana	Illinois-southwest Indiana	Mid-Continent	Gulf coast	Rocky Mountain	California [1]	Total			
1922	33,805	8,868	685	10,140	152,573	24,781	1,991	49,375	248,413	8,428	984	291,630
1923	33,259	9,210	975	11,091	202,904	23,974	19,704	62,162	330,020	9,850	1,383	374,512
1924	{ 40,995 [2] 31,184	9,286	1,221	10,870	210,558	20,200	28,672	{ 68,867 [3] 96,505	{ 349,674 [3] 377,312	8,389	734	{ 399,792 [3] 417,619
1925	[2] 27,157	8,493	971	10,582	195,941	19,263	28,995	[3] 129,434	[3] 393,679	7,560	407	[3] 428,803

[1] Includes producers' stocks.
[2] Exclusive of California.
[3] California stocks reported on new basis to include total stocks of crude petroleum and fuel oil.

Stocks of crude petroleum held in the United States at end of each month, 1924–25

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December
1924												
East of California:												
At refineries, by location of storage—												
East coast—												
Domestic	6,132	6,727	7,298	7,484	7,575	7,964	8,355	9,238	8,239	8,440	7,974	8,230
Foreign	1,718	1,883	2,052	2,959	3,010	2,745	2,141	1,704	1,774	1,135	1,419	1,462
Appalachian	1,221	1,214	1,297	1,352	1,206	1,322	1,326	1,330	1,358	1,357	1,336	1,306
Indiana, Illinois, etc	1,261	1,271	1,372	1,460	1,486	1,536	1,481	1,456	1,527	1,507	1,583	1,762
Oklahoma, Kansas, etc	5,212	5,298	5,122	5,363	5,276	4,857	4,945	5,058	5,417	5,284	5,442	5,458
Texas—												
Inland	715	1,011	1,244	1,458	1,415	1,418	1,324	1,340	1,388	1,178	1,313	1,310
Gulf coast—												
Domestic	4,023	4,455	4,856	4,864	5,276	4,873	4,647	4,323	5,016	4,839	5,023	4,837
Foreign	580	679	861	853	907	1,009	793	816	855	469	354	358
Arkansas and inland Louisiana	377	349	420	271	315	331	262	270	263	294	208	267
Louisiana—Gulf coast—												
Domestic	4,329	5,002	5,367	5,366	5,505	5,553	5,459	5,349	5,034	4,313	4,474	3,763
Foreign	1,332	1,743	1,792	1,698	1,452	1,388	1,311	1,209	1,129	1,081	1,220	1,474
Rocky Mountain	1,123	1,210	1,290	1,247	1,304	1,258	1,310	1,238	1,192	1,230	1,206	957
Total at refineries	28,023	30,842	32,971	34,375	34,727	34,254	33,354	33,331	33,192	31,127	31,552	31,184
Pipe-line and tank-farm stocks—												
Domestic petroleum, by fields of origin—												
Appalachian—												
New York, Pennsylvania, West Virginia, eastern and central Ohio—Gross	6,791	6,699	6,556	6,377	6,581	6,495	6,846	6,796	7,027	7,197	7,233	7,261
New York, Pennsylvania, West Virginia, eastern and central Ohio—Net	6,516	6,424	6,282	6,103	6,312	6,225	6,586	6,566	6,769	6,938	6,981	7,020
Kentucky—Gross	2,969	2,818	2,677	2,635	2,658	2,719	2,743	2,645	2,543	2,528	2,521	2,388
Kentucky—Net	2,847	2,696	2,549	2,505	2,527	2,593	2,621	2,533	2,414	2,400	2,398	2,266
Lima-Indiana—Gross	1,152	1,163	1,209	1,215	1,246	1,294	1,349	1,393	1,438	1,468	1,433	1,431
Lima-Indiana—Net	917	927	973	986	1,017	1,064	1,124	1,169	1,227	1,253	1,218	1,221
Illinois-southwestern Indiana—Gross	11,519	11,456	11,467	11,310	11,513	11,463	11,537	11,770	11,845	11,762	11,562	11,401
Illinois-southwestern Indiana—Net	11,071	10,998	11,009	10,843	11,016	10,966	11,040	11,268	11,314	11,231	11,031	10,870
Mid-Continent—												
Oklahoma, Kansas, north, central, and western Texas—Gross	180,142	179,590	178,990	180,800	182,133	185,663	187,920	192,193	193,983	194,037	192,574	187,884
Oklahoma, Kansas, north, central, and western Texas—Net	168,898	168,177	167,406	169,327	170,449	173,934	176,433	180,667	182,061	182,862	181,489	176,754
North Louisiana and Arkansas—Gross	33,766	33,890	35,150	36,980	38,506	39,592	39,049	38,355	37,563	37,945	36,793	36,047
North Louisiana and Arkansas—Net	31,882	31,993	32,696	34,896	36,329	37,392	36,931	36,213	35,447	35,808	34,756	33,804
Gulf coast—Gross	23,936	24,004	23,290	22,610	22,334	20,757	21,415	21,509	21,665	21,524	21,112	20,565
Gulf coast—Net	23,532	23,591	22,865	22,174	21,901	20,357	21,016	21,084	21,253	21,115	20,729	20,200
Rocky Mountain—Gross	21,449	22,892	23,957	25,373	26,369	27,269	28,246	29,711	29,836	29,266	28,969	28,711
Rocky Mountain—Net	21,423	22,875	23,939	25,360	26,356	27,257	28,224	29,685	29,810	29,242	28,931	28,672
Total pipe-line and tank-farm—Gross	281,724	282,512	283,296	287,300	291,340	295,252	299,105	304,372	305,900	305,727	302,197	295,688
Total pipe-line and tank-farm—Net	267,086	267,681	267,719	272,194	275,907	279,788	283,975	289,185	290,295	290,849	287,533	280,807

Stocks of crude petroleum held in the United States at end of each month, 1924–25—Continued

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December
1924—Continued												
East of California—Continued.												
Foreign crude petroleum held in United States by importers—												
At Atlantic coast stations	239	145	241	312	358	251	215	297	264	128	202	199
At Gulf coast stations	957	1,013	1,038	1,069	978	913	1,003	796	555	461	572	535
Total	1,196	1,158	1,279	1,381	1,336	1,164	1,218	1,093	819	589	774	734
Producers' stocks [1]	9,726	9,610	9,486	9,367	9,243	9,124	9,000	8,876	8,757	8,633	8,513	8,389
Total crude stocks east of California	306,031	309,291	311,455	317,317	321,213	324,330	327,547	332,485	333,063	331,198	328,372	321,114
California:												
Refinery stocks	6,070	6,332	5,779	5,636	5,774	6,246	6,616	7,305	8,357	9,192	8,852	9,811
Pipe-line, tank-farm, and producers' stocks	63,314	63,151	64,986	65,045	66,154	66,463	67,181	68,007	70,104	68,640	69,226	68,867
Total California	69,384	69,483	70,765	70,681	71,928	72,709	73,797	75,312	78,461	77,832	78,078	78,678
Total United States	375,415	378,774	382,220	387,998	393,141	397,039	401,344	407,797	411,524	409,030	406,450	399,792
California (new basis):												
Light	35,580	37,633	37,922	38,132	38,540	39,188	40,407	40,255	40,684	41,064	39,639	40,541
Heavy (including fuel oil)	48,836	49,113	48,769	49,594	50,689	51,882	52,156	52,799	52,683	53,298	54,713	55,964
1925												
East of California:												
At refineries, by location of storage—												
East coast—												
Domestic	8,523	7,734	8,081	8,504	8,200	8,784	8,601	7,122	7,643	6,079	5,134	4,801
Foreign	2,020	2,446	2,665	1,900	1,859	2,100	2,209	2,370	2,258	2,290	2,550	2,650
Appalachian	1,282	1,218	1,190	1,210	1,165	1,253	1,307	1,302	1,335	1,374	1,402	1,507
Indiana, Illinois, etc	1,855	1,800	1,479	1,574	1,549	1,558	1,438	1,148	924	1,091	1,116	1,318
Oklahoma, Kansas, etc	5,507	5,955	4,939	4,868	4,975	5,422	5,290	4,696	4,422	3,793	3,578	3,422
Texas—												
Inland	1,138	1,228	1,133	1,282	1,139	1,120	1,289	1,131	1,131	984	1,116	944
Gulf coast—												
Domestic	4,897	4,688	4,374	4,438	4,821	5,529	5,496	5,153	5,390	5,169	5,329	5,616
Foreign	543	655	519	556	726	651	663	530	580	610	491	341
Arkansas and inland Louisiana	292	343	413	403	598	678	604	574	716	715	926	656

Louisiana, Gulf coast—												
Domestic	3,755	4,128	4,812	4,660	4,273	3,983	4,533	3,834	3,725	3,384	2,784	3,242
Foreign	1,623	1,865	1,930	1,797	1,730	1,423	1,421	1,404	1,042	1,095	1,178	1,197
Rocky Mountain	931	886	1,078	1,262	1,380	1,381	1,456	1,451	1,494	1,449	1,540	1,463
Total at refineries	32,366	32,946	32,613	32,454	32,415	33,882	34,307	30,715	30,660	28,033	27,144	27,157
Pipe-line and tank-farm stocks—												
Domestic petroleum, by fields of origin—												
Appalachian—												
New York, Pennsylvania, West Virginia, eastern and central Ohio	Gross	7,304	7,352	7,254	7,236	7,212	7,276	7,127	7,087	7,141	7,123	7,225	7,047
	Net	7,062	7,111	7,038	6,989	6,952	7,025	6,874	6,854	6,860	6,819	6,924	6,745
Kentucky	Gross	2,390	2,449	2,358	2,263	2,202	2,063	2,005	1,966	1,936	1,814	1,859	1,854
	Net	2,268	2,333	2,243	2,146	2,085	1,954	1,902	1,868	1,827	1,706	1,754	1,748
Lima-Indiana	Gross	1,397	1,407	1,364	1,367	1,422	1,353	1,313	1,285	1,302	1,260	1,237	1,173
	Net	1,183	1,190	1,151	1,154	1,209	1,150	1,114	1,097	1,100	1,058	1,035	971
Illinois-southwestern Indiana	Gross	11,377	11,341	11,424	11,470	11,551	11,479	11,379	11,448	11,090	11,047	11,048	11,056
	Net	10,845	10,813	10,936	10,982	11,060	10,986	10,886	10,954	10,620	10,574	10,577	10,582
Mid-Continent—												
Oklahoma, Kansas, north, central, and western Texas	Gross	186,832	185,551	184,664	183,481	182,327	177,722	174,529	172,982	171,738	171,304	169,901	165,244
	Net	175,193	174,275	173,088	171,845	170,860	166,203	163,104	161,629	159,315	159,470	158,368	153,012
North Louisiana and Arkansas	Gross	35,682	35,370	34,766	35,801	39,018	41,304	41,688	42,426	43,319	43,792	44,336	45,186
	Net	33,660	33,284	32,711	34,007	37,117	39,382	39,603	40,159	41,145	41,462	42,061	42,929
Gulf coast	Gross	19,426	19,309	19,909	20,086	20,727	20,895	21,406	21,112	20,716	20,396	20,151	19,624
	Net	19,076	18,948	19,517	19,676	20,325	20,477	20,951	20,657	20,310	19,981	19,771	19,263
Rocky Mountain	Gross	28,809	28,938	28,995	28,997	28,930	28,788	28,608	28,583	28,623	28,606	28,736	29,040
	Net	28,773	28,902	28,956	28,958	28,895	28,756	28,574	28,548	28,580	28,563	28,692	28,995
Total pipe-line and tank-farm	Gross	293,217	291,717	290,734	290,701	293,389	290,880	288,055	286,889	285,865	285,342	284,493	280,224
	Net	278,060	276,856	275,640	275,757	278,503	275,933	273,008	271,766	269,757	269,633	269,182	264,245
Foreign crude petroleum held in United States by importers—												
At Atlantic coast stations		187	204	256	231	204	120	173	197	143	47	79	104
At Gulf coast stations		406	320	220	492	825	759	743	613	596	480	499	303
Total		593	524	476	723	1,029	879	916	810	739	527	578	407
Producers' stocks [1]		8,319	8,256	8,186	8,117	8,047	7,978	7,908	7,838	7,769	7,699	7,630	7,560
Total crude stocks east of California		319,338	318,582	316,915	317,051	319,994	318,672	316,139	311,129	308,925	305,892	304,534	299,369
California:													
Light		41,914	42,450	43,422	44,040	44,600	44,058	43,411	[2] 41,566	43,007	44,059	44,561	44,451
Heavy (including fuel oil)		58,112	59,279	60,299	62,565	65,481	68,337	72,388	78,507	81,476	83,391	84,373	84,983

[1] Figures for December based on reports from companies; other months prorated.

[2] 1,180,000 barrels refinable crude transferred to heavy crude stocks in August.

CONSUMPTION

As stocks of manufactured fuel oil in California were combined with heavy crude during 1925, it is no longer possible to continue certain tables showing supply and demand of crude which have been used regularly in the past to measure consumption. These tables have been replaced by others that give the consumption of crude petroleum at refineries and the consumption of all oil; that is, crude petroleum and refined products. This table (pp. 313 and 314) assumes that petroleum and all its products are of equal importance; it differentiates automatically between transformation (refining) and consumption and shows the total consumption of crude petroleum and refined products.

The total new supply of all oils in 1925 amounted to 841,943,000 barrels, an increase over 1924 of 33,422,000 barrels, or 4 per cent. Total stocks of crude petroleum and refined products on hand December 31, 1923, 1924, and 1925, were, respectively, 483,515,000, 511,596,000, and 541,692,000 barrels. These figures indicate a total increase in stocks of approximately 60,000,000 barrels, distributed about evenly between the two years.

In 1925 total demand for all oil (domestic demand plus exports) amounted to 811,847,000 barrels, an increase over 1924 of 4 per cent. Domestic demand was 698,294,000 barrels, a daily average of 1,913,000 barrels and an increase over 1924 of 5 per cent. Thus, although total demand increased 4 per cent, home consumption increased 5 per cent. The change resulted from a decrease in total exports in 1925 and indicates the growing importance of domestic markets as compared to foreign.

In 1925 the average excess of daily average domestic production over daily average domestic consumption of all oil was 179,000 barrels as compared with 138,000 barrels in 1924. In December, 1925, daily average domestic consumption exceeded production, a tendency that became decided in 1926.

Crude petroleum run to stills at refineries in the United States, 1924–25, by districts and months

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1924													
East coast.													
Domestic	9,437	8,224	9,208	9,505	9,405	9,728	8,488	9,786	8,655	9,085	8,994	9,037	109,552
Foreign	1,533	1,926	2,103	2,345	2,355	2,326	2,741	2,274	1,952	1,925	2,124	2,046	25,650
Appalachian	1,719	1,669	1,823	1,897	1,935	1,816	1,826	1,797	1,854	1,959	1,790	1,873	21,958
Indiana, Illinois, etc	4,811	4,554	4,800	4,616	4,915	4,429	4,528	4,337	4,550	4,862	4,940	5,057	56,399
Oklahoma, Kansas, etc	6,117	6,106	6,229	6,624	6,523	6,405	6,131	6,535	6,744	7,060	7,351	7,876	79,701
Texas:													
Inland	2,298	2,390	2,672	2,604	2,514	2,332	2,424	2,619	2,653	2,745	2,753	2,988	30,992
Gulf coast—													
Domestic	5,994	5,868	6,584	6,397	6,183	6,371	6,771	6,853	7,312	8,271	7,771	8,605	82,980
Foreign	915	973	954	1,121	1,178	833	1,149	934	1,093	590	717	596	11,053
Arkansas and inland Louisiana	837	737	866	940	981	1,224	1,178	1,177	1,246	1,195	1,160	1,122	12,663
Louisiana, Gulf coast:													
Domestic	2,420	2,613	1,936	1,681	2,500	1,606	2,364	2,689	2,350	2,691	2,371	2,471	27,692
Foreign	836	712	856	853	756	566	668	803	911	708	728	665	9,062
Rocky Mountain	2,149	2,173	2,277	2,252	2,380	2,314	2,362	2,303	2,352	2,283	2,046	1,846	26,737
California	11,947	11,962	12,391	12,279	13,100	12,486	12,246	12,536	11,945	12,405	12,284	13,699	149,280
	51,013	49,907	52,699	53,114	54,725	52,436	52,876	54,643	53,617	55,779	55,029	57,881	643,719
1925													
East coast:													
Domestic	8,696	8,024	8,877	9,162	9,161	9,283	10,495	9,069	8,255	8,374	7,644	7,685	104,725
Foreign	1,743	1,853	2,362	2,579	2,386	1,963	1,303	1,505	1,706	2,231	2,256	1,879	23,766
Appalachian	1,993	1,813	2,140	2,043	2,204	2,158	2,122	2,243	2,130	2,160	2,045	2,067	25,118
Indiana, Illinois, etc	5,585	5,280	5,464	5,268	5,803	5,811	6,013	6,051	5,667	5,477	5,311	5,429	67,159
Oklahoma, Kansas, etc	7,533	7,285	7,769	7,708	8,446	8,892	9,352	9,144	8,423	7,960	7,341	7,759	97,612
Texas:													
Inland	3,110	2,924	3,146	3,030	3,317	3,155	3,028	3,034	2,779	2,709	2,735	2,990	35,957
Gulf coast—													
Domestic	8,637	7,642	8,051	7,859	7,990	8,530	8,504	8,836	8,369	9,004	8,188	9,138	100,748
Foreign	634	699	725	907	659	662	651	581	340	438	729	552	7,577
Arkansas and inland Louisiana	1,081	1,034	1,296	1,491	1,374	1,481	1,563	1,333	1,269	1,408	1,449	1,460	16,239
Louisiana, Gulf coast:													
Domestic	2,580	2,442	2,890	2,841	3,258	3,461	4,017	4,304	3,502	3,942	3,759	3,767	40,763
Foreign	832	666	1,051	1,150	1,168	1,361	639	657	847	599	550	475	9,995
Rocky Mountain	1,812	1,701	1,700	1,989	2,195	2,268	2,482	2,512	2,397	2,527	2,365	2,216	26,164
California	13,244	11,758	14,081	13,283	14,418	15,888	17,406	17,747	16,431	17,141	15,938	16,762	184,097
	57,480	53,121	59,552	59,310	62,379	64,913	67,575	67,016	62,115	63,970	60,310	62,179	739,920

Indicated deliveries of crude petroleum (exclusive of California grades) to domestic consumers, 1924–25, by months [1]

[Thousands of barrels of 42 U. S. gallons]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1924													
Domestic petroleum, by fields of origin:													
Appalachian	1,948	2,348	2,558	2,567	2,131	2,275	2,028	2,360	2,215	2,280	2,035	2,246	26,991
Lima-Indiana	220	171	156	196	180	164	148	148	136	176	192	157	2,044
Illinois and southwestern Indiana	703	777	775	846	602	799	710	516	692	850	872	825	8,967
Mid-Continent	29,120	28,054	30,963	27,025	30,202	27,344	31,001	30,439	32,562	31,579	33,611	36,786	368,886
Gulf coast	2,794	2,402	3,295	2,994	2,699	3,877	1,891	2,315	2,200	2,758	2,749	2,735	32,709
Rocky Mountain [2]	2,689	2,517	2,778	2,752	2,811	2,758	2,791	2,403	3,256	3,679	2,972	2,716	34,122
Deliveries and exports	37,474	36,269	40,525	36,380	38,625	37,217	38,569	38,181	41,061	41,322	42,431	45,465	473,519
Exports	865	954	892	898	1,177	796	892	777	1,390	699	944	679	10,963
Deliveries	36,609	35,315	39,633	35,482	37,448	36,421	37,677	37,404	39,671	40,623	41,487	44,786	462,556
Foreign petroleum	6,442	6,520	8,475	7,168	7,411	6,807	6,408	5,850	5,608	5,055	6,447	5,865	78,056
	43,051	41,835	48,108	42,650	44,859	43,228	44,085	43,254	45,279	45,678	47,934	50,651	540,612
1925													
Domestic petroleum, by fields of origin:													
Appalachian	2,154	1,985	2,505	2,496	2,392	2,436	2,619	2,386	2,380	2,541	2,039	2,464	28,397
Lima-Indiana	204	159	222	187	127	257	230	200	176	216	175	221	2,374
Illinois and southwestern Indiana	744	689	656	599	638	798	850	631	1,056	778	686	686	8,811
Mid-Continent	35,305	31,622	35,258	34,893	38,350	41,216	40,661	38,144	37,212	34,832	34,430	37,819	439,742
Gulf coast	3,265	2,104	2,222	2,709	2,602	2,775	2,634	3,185	3,222	3,228	2,884	3,174	34,004
Rocky Mountain	2,540	2,378	2,868	2,893	2,948	2,945	3,244	3,222	3,185	3,283	3,040	2,756	35,302
Other [3]	1	1	1	1	1	1	1	1	1	1	1	1	12
Deliveries and exports	44,213	38,938	43,732	43,778	47,058	50,428	50,239	47,769	47,232	44,879	43,255	47,121	548,642
Exports	895	792	819	613	1,226	972	988	1,081	659	761	696	651	10,153
Deliveries	43,318	38,146	42,913	43,165	45,832	49,456	49,251	46,688	46,573	44,118	42,559	46,470	538,489
Foreign petroleum	7,151	5,638	6,403	5,212	6,152	5,285	4,086	4,132	4,066	4,567	4,837	4,412	61,941
	50,469	43,784	49,316	48,377	51,984	54,741	53,337	50,820	50,639	48,685	47,396	50,882	600,430

[1] Indicated deliveries equal production plus imports plus stocks, exclusive of refinery stocks, at beginning of period minus exports and stocks at end of period.
[2] Includes Alaska.
[3] Alaska and Michigan.

Crude petroleum and fuel oil consumed for fuel, 1919–1925

[Thousands of barrels of 42 U. S. gallons]

	1919	1920	1921	1922	1923	1924	1925
Crude oil:							
On producing oil properties	5,600	4,647	4,261	5,747	4,316	4,284	4,286
In operation of pipe lines east of California	(1)	(1)	1,668	1,767	1,715	1,852	1,825
Fuel oil (including some crude and gas oil):							
By refineries	23,717	(1)	(1)	(1)	(1)	(1)	50,455
By locomotives (all services, class 1 carriers) [2]	37,763	45,945	39,558	43,527	55,580	58,950	58,520
By vessels cleared for foreign countries (bunker oil) [3]	14,031	26,335	27,076	31,692	37,582	43,328	42,827
By U. S. Navy (fiscal year) [4]	5,845	7,530	6,372	5,827	7,044	7,100	7,404
By U. S. Shipping Board—							
Domestic oil	3,000	2,000	3,361	17,515	19,049	18,579	12,570
Mexican oil	7,000	14,742	11,936				
Open-market purchase	2,500	4,185	3,824	714			
	12,500	20,927	19,121	18,229	19,049	18,579	12,570
By gas manufacturers	[5] 22,700	21,982	[5] 21,380	20,381	[6] 22,156	[7] 23,000	[7] 23,000
By electric public-utility power plants [8]	11,050	13,123	12,045	13,197	14,679	16,630	10,246

[1] Data not available.
[2] Interstate Commerce Commission.
[3] Bureau of Foreign and Domestic Commerce.
[4] Navy Department.
[5] American Gas Association.
[6] Bureau of the Census.
[7] Estimated.
[8] U. S. Geological Survey.

PRICES

Prices for crude, in general, were higher in 1925 than in 1924; nearly all the States reported increases in value per barrel at the well. A notable exception was Arkansas, where the average price fell from 94 cents in 1924 to 89 cents in 1925. Oklahoma and Kansas both registered 40-cent gains in average value, and this increase was the largest single factor in the increase for the whole country from $1.43 in 1924 to $1.68 in 1925.

Posted prices of crude petroleum in 1925 had the usual early spring advances and the late summer declines, although prices at the end of the year were nearly all higher than at the beginning. The major increases were in February, the major declines in August.

Posted prices of the average grade of crude oil in the Appalachian field had two high points, one in February and one in June; there was a decline in August and a recovery late in the season. Posted prices in most of the Oklahoma fields reached their peak in February and then were steady until August, when they declined somewhat; at the end of the year they were considerably higher than at the beginning. Rapid development of the prolific deep sands in the Smackover field in March and April flooded the market and greatly depressed the posted price in that field until, in April, the price was 40 to 50 cents a barrel for oil to be run to storage. Prices rallied as facilities for storage and transportation increased and by July 15 were on a par with those at the beginning of the year. Posted prices for the higher grades of Smackover crude were not affected by the April depression and at no time were much below the peak figure reached in February. The establishing of the gravity basis in the Salt Creek field in July makes it difficult to trace the movement of prices over the entire year. However, this field, in common with most of the others of the Rocky Mountain area, had the usual February increases and late summer decreases. Posted prices in the Sunburst field were noteworthy for the fact that they increased in the middle of the year when

other prices were falling. Posted prices in California continued to react from the overproduction period of 1923, the outstanding changes being a material rise in the first part of February, 1925, and a smaller decline in September. The decline mainly affected heavy crudes, stocks of which had been accumulating for some time.

Average price per barrel paid for crude petroleum at the wells, 1923–1925, by States

[Based on actual purchases, including premiums]

State	1923	1924	1925	State	1923	1924	1925
Alaska	(1)	(1)	$4.25	New York	$3.31	$3.64	$3.70
Arkansas	$0.69	$0.94	.89	Ohio:			
California [2]	.92	1.20	1.42	Central and eastern	2.57	2.74	2.67
Colorado	1.19	1.10	1.48	Northwestern	2.02	2.00	2.17
Illinois	1.87	1.76	1.94	Total Ohio	2.41	2.52	2.53
Indiana:				Oklahoma	1.74	1.57	1.97
Southwestern	1.82	1.80	1.92	Pennsylvania	3.33	3.61	3.62
Northeastern	1.84	1.93	2.06	Tennessee	1.75	1.80	2.21
Total Indiana	1.82	1.84	1.95	Texas:			
Kansas	1.63	1.54	1.94	Gulf coast	1.39	1.56	1.62
Kentucky	1.97	1.97	2.32	Rest of State	1.50	1.51	1.86
Louisiana:				Total Texas	1.48	1.52	1.81
Gulf coast	1.36	1.63	1.57	Utah	------	(1)	1.00
Northern	1.48	1.41	1.61	West Virginia	3.27	3.52	3.48
Total Louisiana	1.47	1.44	1.60	Wyoming	1.09	1.23	1.76
Michigan	------	------	2.50	Other	[3] 2.28	[4] 3.38	------
Montana	1.47	1.33	1.57				
New Mexico	(1)	1.30	1.71	United States	1.34	1.43	1.68

[1] Included under "Other."
[2] California State Mining Bureau.
[3] Alaska, Missouri, and New Mexico.
[4] Alaska and Utah.

Posted price per barrel of crude petroleum at wells in 1925, by grades, with dates of change

Date	Appalachian field [1]											Lima-Indiana field [2]		Illinois and southwestern Indiana field [2]		
	Pennsylvania grade in lines of New York Transit Co. and Bradford grade in lines of National Transit Co.	Pennsylvania grade				Gaines grade in lines of National Transit Co.	Cabell grade in lines of Eureka Pipe Line Co.	Corning grade in lines of Buckeye Pipe Line Co.	Wooster [3]	Ragland	Somerset oil in lines of Cumberland Pipe Line Co.		Lima, Ohio	Indiana	Illinois and Princeton, Ind.	Plymouth	Waterloo
		In lines of National Transit Co.	In lines of Southwest Pennsylvania Pipe Line Co.	In lines of Eureka Pipe Line Co.	In lines of Buckeye Pipe Line Co.						Medium	Light					
Jan. 1	$3.10	$3.00	$3.00	$3.00	$3.00	-------	$1.45	$1.50	$1.40	$0.90	$1.55	$1.70	$1.58	$1.38	$1.37	$0.75	$0.75
Jan. 3									1.50								.90
Jan. 22													1.68	1.48	1.47	1.00	-------
Jan. 23	3.35	3.25	3.25	3.25	3.25	-------	1.70	1.70	1.70	1.05	1.80	1.95	1.83	1.63	1.62	1.15	1.00
Jan. 31	3.60	3.50	3.50	3.50	3.50	-------	1.95		1.95	1.20	2.05	2.20	2.08	1.88	1.87	1.40	-------
Feb. 2								1.95									
Feb. 13							2.20	2.25	2.25	1.30	2.30	2.45	2.33	2.13	2.12	1.65	-------
Feb. 14	3.85	3.75	3.75	3.75	3.75	-------											
Feb. 16																	1.20
Mar. 23	3.65	3.55	3.55	3.50	3.40	$3.55											
Mar. 24													2.23	2.03	2.02	1.55	1.10
Apr. 2								2.10									
Apr. 3									2.15								
Apr. 17	3.40	3.30	3.30	3.25	3.15	3.15	2.05				2.15	2.30					
Apr. 23								1.95									
May 20	3.65	3.55	3.55	3.50	3.40	3.30	2.20				2.30	2.45					
June 6	3.90	3.80	3.80	3.75	3.75	3.45	2.35				2.45	2.60					
June 10								2.05									
July 6									2.25								
July 8								2.25									
July 11									2.35				2.33	2.13	2.12	1.65	-------
Aug. 11	3.65	3.55	3.55	3.50	3.50	3.20											
Aug. 17	3.40	3.30	3.30	3.25	3.25	2.95	2.20			1.20	2.30	2.45					
Aug. 18					3.00												
Aug. 19								1.80									
Aug. 21									2.25				2.23				
Aug. 28									2.00				1.98	1.88	1.87	1.40	1.00

[1] Joseph Seep Purchasing Agency.

[2] Ohio Oil Co.

Posted price per barrel of crude petroleum at wells in 1925, by grades, with dates of change—Continued

Date	Appalachian field												Lima-Indiana field		Illinois and southwestern Indiana field		
	Pennsylvania grade in lines of New York Transit Co. and Bradford grade in lines of National Transit Co.	Pennsylvania grade				Gaines grade in lines of National Transit Co.	Cabell grade in lines of Eureka Pipe Line Co.	Corning grade in lines of Buckeye Pipe Line Co.	Wooster	Ragland	Somerset oil in lines of Cumberland Pipe Line Co.		Lima, Ohio	Indiana	Illinois and Princeton, Ind.	Plymouth	Waterloo
		In lines of National Transit Co.	In lines of Southwest Pennsylvania Pipe Line Co.	In lines of Eureka Pipe Line Co.	In lines of Buckeye Pipe Line Co.						Medium	Light					
Aug. 29	$3.15	$3.05	$3.05	$3.00	$2.80	$2.70	$2.10			$1.10	$2.20	$2.35					
Oct. 14							1.95			1.00	2.05	2.20		$1.78			
Nov. 23	3.40	3.30	3.30	3.25	3.05	2.95	2.10			1.10	2.20	2.35					
Nov. 30										1.15							
Dec. 11								$1.95									
Dec. 12	3.65	3.55	3.55	3.50	3.30												
Average for year	3.51	3.41	3.41	3.37	3.28	3.09	2.10	1.96	$2.08	1.19	2.20	2.35	$2.11	1.93	$1.94	$1.46	$1.06

Date	Mid-Continent field												
	Kansas-Oklahoma; north central, east and south central Texas												
	Gravity schedule for Kansas, Oklahoma, and north Texas [1 3 4]					Corsicana [2]		Currie [3]	Mexia [3]	Powell, Richland [4]	Wortham [4]	Lytton Springs [4]
	Below 30°	30 to 32.9°	33 to 35.9°	36° and above		Heavy	Light					
Jan. 1	$0.75	$0.90	$1.10	$1.25		$0.90	$1.25	$1.25	$1.25	$1.25	$1.25	
				36–38.9°	39° and above							
Jan. 22	1.00	1.15	1.35	$1.50	$1.60			1.50		1.50	1.50	
Jan. 23							1.50		1.50			

Jan. 30	1.15		1.35			1.55			1.70			39–41.9° $1.85			42° and above $1.95				1.80		1.80		1.80	1.70	
Jan. 31																					1.70				
Feb. 2																		1.00		1.80					
Feb. 5																								1.80	
Feb. 6															2.00						1.80				
Feb. 12	1.35		1.55			1.80			[5] 1.95			[5] 2.10			2.35				2.00			2.00	2.00	
Feb. 13																				2.00	2.00				
Feb. 17									2.00			2.25													
June 1																									$2.00
June 26																			Below 42° $2.00	42° and above $2.25					
	28–28.9°	29–29.9[a]	30–30.9°	31–31.9°	32–32.9°	33–33.9°	34–34.9°	35–35.9°	36–36.9°	37–37.9°	38–38.9°	39–39.9°	40–40.9°	41–41.9°	42–42.9°	43–43.9°	44° and above								
July 10	$1.40	$1.48	$1.56	$1.64	$1.72	$1.80	$1.88	$1.96	$2.04	$2.12	$2.20	$2.28	$2.36	$2.44	$2.52	$2.60	$2.68								
July 13																			[6]	[6]	[6]	[6]	[5]	[6]	
Aug. 15 [7]	1.35	1.41	1.47	1.53	1.59	1.65	1.71	1.77	1.83	1.89	1.95	2.01	2.07	2.13	2.19	2.25	2.31								
Aug. 27 [8]	1.15	1.23	1.31	1.39	1.47	1.55	1.63	1.71	1.79	1.87	1.95	2.03	2.11	2.19	2.27	2.35	2.43								
Nov. 23																		1.05							
Average for year [1]	1.24	1.28	1.41	1.45	1.49	1.65	1.69	1.73	1.87	1.91	1.94	2.09	2.13	2.17	2.25	2.29	2.33	1.00							

[1] Prairie Oil and Gas Co.
[2] Magnolia Petroleum Co.
[3] The Texas Co.
[4] Humble Oil & Refining Co.
[5] Texas Co. and Humble Oil & Refining Co. quoted 36–38.9° oil at $2 and 39–41.9° oil at $2.25 with no changes on Feb. 17.
[6] Central Texas grades put on gravity basis July 10 by Texas Co. and Humble Oil & Refining Co., and July 13 by Magnolia Petroleum Co.
[7] Humble Oil & Refining Co. These prices met by Texas Co. Aug. 21.
[8] Prairie Oil and Gas Co. These prices met by Texas Co. Sept. 1 for Kansas-Oklahoma grades; Nov. 23 for north, north central, and central Texas grades, and by Humble Oil & Refining Co. Nov. 21.

Posted price per barrel of crude petroleum at wells in 1925, by grades, with dates of change—Continued

Date	Mid-Continent field—Continued																								
	North Louisiana and Arkansas [1]																								
	Bellevue below 32°	Bull Bayou			Caddo				Cotton Valley	Crichton	De Soto	Haynesville		Homer				Calion below 24° [2]	El Dorado		Smackover				
		32 to 34.9°	35 to 37.9°	38° and above	Below 32°	32 to 34.9°	35 to 37.9°	38° and above				Below 33°	33° and above	Below 31°	31 to 32.9°	33 to 34.9°	35° and above		Below 33°	33° and above	Below 25°	25° and above			
																						25 to 25.9°	26 to 26.9°	27 to 27.9°	28° and above
Jan. 1	$1.35	$0.85	$1.00	$1.15	$1.00	$1.15	$1.25	$1.35	$0.95	$1.00	$1.20	$0.90	$1.00	$0.75	$0.90	$1.00	$1.10	$0.85	$0.90	$1.00	$0.85	$0.95			
Jan. 20																						$0.95	$1.05	$1.10	$1.15
Jan. 23	1.50	1.10	1.25	1.40	1.25	1.40	1.50	1.60	1.10	1.25	1.45	1.15	1.25	1.00	1.15	1.25	1.35	1.00	1.15	1.25	1.00	1.10	1.20	1.25	1.30
Jan. 30	1.75	1.30	1.45	1.60	1.45	1.60	1.70	1.80	1.25	1.45	1.65	1.35	1.45	1.20	1.35	1.45	1.55	1.15	1.35	1.45	1.15	1.25	1.35	1.40	1.45
Feb. 14	2.00	1.55	1.70	1.85	1.70	1.85	1.95	2.05	1.40	1.70	1.90	1.60	1.70	1.45	1.60	1.70	1.80	1.30	1.60	1.70	1.30	1.40	1.50	1.55	1.60
Mar. 12									1.25									1.15			1.15	1.25	1.35	1.40	1.45
Mar. 21									1.10									1.00			1.00	1.10	1.20	1.25	1.30
Mar. 27									1.00																
Apr. 14																		.80			.80				
Apr. 15																		.60							
Apr. 16																					{.80 / 1.50}				
																					Below 24°	24 to 24.9°	25° and above		27° and above
Apr. 18																		.40			{$0.60 / 3 .40}	$1.10	1.20	1.25	$1.30
Apr. 23	1.75																								
Apr. 25																					.40				
May 8																		.60			.60				
May 18																		.70			.70				

May 22																			.80			.80			
July 15	1.90	1.70	1.85	2.00	1.85	2.00	2.10	2.20	1.10	1.85	2.05	1.75	1.85	1.60	1.75	1.85	1.95	.85	1.75	1.85	.85	1.15	1.25	1.30	1.35
Aug. 1	1.65																								
Aug. 27		1.45	1.60	1.75	1.60	1.75	1.85	1.95		1.60	1.80	1.50	1.60	1.35	1.50	1.60	1.70		1.50	1.60					
Aug. 28					1.65							1.55	1.65	1.40	1.55	1.65	1.75		1.55	1.65			1.20	1.25	1.30
Av. for year	1.73	1.47	1.62	1.77	1.64	1.77	1.87	1.97	1.09	1.62	1.82	1.54	1.64	1.39	1.54	1.64	1.74	.87	1.54	1.64	.88	1.11	1.20	1.26	

Date	Gulf coast field								
	Coastal Texas							Coastal Louisiana [5]	
	Batson, CowBayou, Saratoga, Spindletop [4]	Goose Creek, Hull, Sourlake		Big Creek, Blue Ridge, Pierce Junction [4]	High Island [5]	Humble, Liberty, Markham, West Columbia [6]		Edgerley, Vinton	Jennings
		Grade A [4]	Grade B [4]						
Jan. 1	$1.50	$1.50	$1.25	$1.25	$0.95	$1.50		$1.50	$1.50
Jan. 29	1.75	1.75	1.50	1.50	1.20	1.75		1.75	1.75
Feb. 12	2.00	2.00	1.75	1.75	1.45	2.00		2.00	2.00
Mar. 1					1.70				
Mar. 19									1.75
Apr. 13	1.75	1.75	1.50	1.50	1.45	1.75		1.75	1.50
						Grade A	Grade B		
July 18						$1.75	$1.50		
Aug. 3	1.58	1.50	1.25	1.25	1.20	1.50	1.25	1.50	1.25
Average for year	1.67	1.67	1.42	1.42	1.33	1.67	1.55	1.67	1.47

[1] Standard Oil Co. of Louisiana.
[2] Gulf Refining Co. of Louisiana.
[3] Run to storage. Discontinued Apr. 25.
[4] Gulf Pipe Line Co.
[5] Sun Pipe Line Co.
[6] Texas Co. first quotation for Liberty, $2, Feb. 26.

Posted price per barrel of crude petroleum at wells in 1925, by grades, with dates of change—Continued

Date	Rocky Mountain field [1]										
	Big Muddy	Cat Creek, Elk Basin, Greybull, Torchlight	Grass Creek		Hamilton Dome	Lance Creek, Osage	Lander	Lost Soldier [2]	Mule Creek	Pilot Butte	Rock Creek
			Light	Heavy							
Jan. 1	$0.75	$1.20	$1.20	$0.90	$0.80	$1.15	$0.45	$0.68	$0.60	$0.5014	$0.95
Jan. 23	1.00	1.45	1.45		1.05	1.40	.70	.88		.7514	1.20
Jan. 31	1.30	1.65	1.65		1.30	1.60		1.04	1.00	1.0514	1.40
Feb. 13	1.55	2.00	2.00		1.55	1.95		1.24	1.25	1.3014	1.65
Feb. 18	1.60				1.60			1.28		1.3514	1.70
Mar. 10	2.00	2.15	2.15		1.80	2.15	.85			1.7514	2.00
Mar. 16									1.50		
May 1								1.35			
Aug. 28	1.75	1.90	1.90		1.35	1.90			1.25	1.5014	1.75
Sept. 10								1.10			
Average for year	1.76	1.96	1.96	.90	1.54	1.95	.81	1.19	1.30	1.51	1.79

Date	Rocky Mountain field—Continued																		
	Salt Creek																Sunburst	Artesia	Hogback
Jan. 1	$0.85																$0.90		
Jan. 23	1.10																1.05		$1.50
Jan. 31	1.30																1.12		1.70
Feb. 13	1.55																1.20		2.05
Feb. 18	1.60																		
Mar. 7																	1.40		
Mar. 10																			2.20
	28–28.9°	29–29.9°	30–30.9°	31–31.9°	32–32.9°	33–33.9°	34–34.9°	35–35.9°	36–36.9°	37–37.9°	38–38.9°	39–39.9°	40–40.9°	41–41.9°	42–42.9°	43–43.9°	44° and above			
July 10	$1.40	$1.48	$1.56	$1.64	$1.72	$1.80	$1.88	$1.96	$2.04	$2.12	$2.20	$2.28	$2.36	$2.44	$2.52	$2.60	$2.68		
July 13																		1.55	
July 21																			$1.70
										37° and above									
Aug. 27		1.23	1.31	1.39	1.47	1.55	1.63	1.71	1.79	$1.87									
Aug. 28																		1.45	1.95
Oct. 12																		1.35	
Dec. 10																	1.35		
Average for year	1.44	1.39	1.43	1.46	1.50	1.54	1.58	1.62	1.66								1.40	1.46	2.06

[1] Ohio Oil Co. and Midwest Refining Co.

[2] Producers and Refiners Corporation.

Posted price per barrel of crude petroleum at wells in 1925, by grades, with dates of change—Continued

Field and date of change	California [1]													
	14 to 14.9°	15 to 15.9°	16 to 16.9°	17 to 17.9°	18 to 18.9°	19 to 19.9°	20 to 20.9°	21 to 21.9°	22 to 22.9°	23 to 23.9°	24 to 24.9°	25 to 25.9°	26 to 26.9°	27 to 27.9°
All fields:														
Jan. 1 [2]	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.01	$1.02	$1.03	$1.05	$1.07	$1.10	$1.13	$1.16
Feb. 4 [2]	1.25	1.25	1.25	1.25	1.25	1.25	1.27	1.30	1.33	1.36	1.40	1.44	1.48	1.52
Signal Hill:														
Sept. 22	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.22	1.26	1.30	1.34
Oct. 27	.85	.87	.90	.94	.98	1.02	1.06	1.10	1.14	------	------	------	------	------
Average for year	1.13	1.14	1.14	1.15	1.16	1.17	1.19	1.22	1.25	1.28	1.32	1.36	1.40	1.44
Huntington Beach-Olinda Brea Canyon-Richfield:														
Sept. 22	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.22	1.26	1.30	1.34
Oct. 27	.85	.87	.90	.94	.98	1.02	1.06	1.10	1.14	------	------	------	------	------
Average for year	1.13	1.14	1.14	1.15	1.16	1.17	1.19	1.22	1.25	1.28	1.32	1.36	1.40	1.44
Inglewood-Torrance:														
Sept. 22	1.00	1.02	1.04	1.06	1.08	1.10	1.12	1.14	1.16	1.18	1.22	1.26	1.30	1.34
Oct. 27	.85	.87	.90	.94	.98	1.02	1.06	1.10	1.14	------	------	------	------	------
Average for year	1.13	1.14	1.14	1.15	1.16	1.17	1.19	1.22	1.25	1.28	1.32	1.36	1.40	1.44
Rosecrans-Dominguez: Sept. 22	------	------	------	------	------	------	------	------	------	------	------	------	1.30	1.34
Average for year	------	------	------	------	------	------	------	------	------	------	------	------	1.40	1.44
Whittier-La Habra:														
Sept. 22	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.03	------	------	------	------	------
Oct. 27	.85	.85	.85	.85	.85	.85	.87	.89	.91	------	------	------	------	------
Average for year	1.13	1.13	1.13	1.13	1.13	1.13	1.15	1.17	1.20	------	------	------	------	------
Montebello:														
Sept. 22	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.03	1.05	1.07	1.09	1.11	1.13
Oct. 27	.85	.85	.85	.85	.85	.85	.87	.89	.91	.94	.97	1.00	1.03	1.06
Average for year	1.13	1.13	1.13	1.13	1.13	1.13	1.15	1.17	1.20	1.23	1.26	1.30	1.33	1.37
Santa Fe Springs:														
Sept. 22	------	------	------	------	------	------	------	------	------	------	1.07	1.10	1.16	1.22
Oct. 27	------	------	------	------	------	------	------	------	------	------	.97	1.05	1.13	1.21
Average for year	------	------	------	------	------	------	------	------	------	------	1.26	1.31	1.35	1.40
Coyote Hills:														
Sept. 22	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.04	1.08	1.12	1.16	1.20	1.24	1.30
Oct. 27	.85	.85	.85	.85	.85	.85	.88	.94	1.00	1.06	1.12	1.18	------	------
Average for year	1.13	1.13	1.13	1.13	1.13	1.13	1.15	1.18	1.22	1.25	1.30	1.34	1.38	1.43

Newhall-McKittrick-Kern River:														
Sept. 22	.90	.90	.90	.90	.90	.90								
Oct. 27	.75	.75	.75	.75	.75	.75								
Average for year	1.10	1.10	1.10	1.10	1.10	1.10								
Midway-Sunset-Elk Hills:														
Sept. 22	.90	.90	.90	.90	.90	.90	.94	.98	1.02	1.06	1.10	1.16	1.24	1.32
Oct. 27	.75	.75	.75	.75	.75	.75	.79	.84	.92	1.00	1.08			
Average for year	1.10	1.10	1.10	1.10	1.10	1.10	1.13	1.16	1.20	1.24	1.28	1.33	1.38	1.43
Lost Hills:														
Sept. 22	.90	.90	.90	.90	.90	.90	.94	.98	1.02	1.06	1.10	1.16	1.24	1.32
Oct. 27	.75	.75	.75	.75	.75	.75	.79	.84	.92	1.00	1.08			
Average for year	1.10	1.10	1.10	1.10	1.10	1.10	1.13	1.16	1.20	1.24	1.28	1.33	1.38	1.43
Coalinga:														
Sept. 22	.90	.90	.90	.90	.90	.90	.91	.92	.93	.95	.99	1.04	1.09	1.14
Oct. 27	.75	.75	.75	.75	.75	.75	.79	.84	.89	.94				
Average for year	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.15	1.18	1.22	1.26	1.30	1.34	1.38
Wheeler Ridge:														
Sept. 22	.90	.90	.90	.90	.90	.90	.91	.92	.93	.95	.97	.99	1.01	1.03
Oct. 27	.75	.75	.75	.75	.75	.75	.78	.81	.84	.87	.90	.93	.96	.99
Average for year	1.10	1.10	1.10	1.10	1.10	1.10	1.12	1.15	1.18	1.20	1.24	1.27	1.31	1.34

[1] Standard Oil Co. (California).

[2] Prices for grades 36° and lighter apply to Rosecrans-Athens only.

Posted price per barrel of crude petroleum at wells in 1925, by grades, with dates of change—Continued

Field and date of change	California [1]—Continued														
	28 to 28.9°	29 to 29.9°	30 to 30.9°	31 to 31.9°	32 to 32.9°	33 to 33.9°	34 to 34.9°	35 to 35.9°	36 to 36.9°	37 to 37.9°	38 to 38.9°	39 to 39.9°	40 to 40.9°	41 to 41.9°	42° and above
All fields:															
Jan. 1 [1]	$1.19	$1.22	$1.25	$1.28	$1.31	$1.34	$1.37	$1.40	$1.46	$1.52	$1.58	$1.64	$1.70	$1.76	$1.82
Feb. 4 [1]	1.56	1.60	1.64	1.68	1.72	1.76	1.80	1.85	1.92	2.00	2.08	2.16	2.24	2.32	2.40
Signal Hill: Sept. 22	1.38	1.42	1.46	1.52											
Average for year	1.48	1.51	1.55	1.60											
Huntington Beach-Olinda Brea Canyon-Richfield:															
Sept. 22	1.38	1.42	1.46												
Average for year	1.48	1.51	1.55												
Inglewood-Torrance: Sept. 22	1.38														
Average for year	1.48														
Rosecrans-Dominguez: Sept. 22	1.38	1.42	1.46	1.52	1.58	1.64	1.70	1.76	1.84	1.92	2.00	2.08	2.16	2.24	2.30
Average for year	1.48	1.51	1.55	1.60	1.64	1.69	1.73	1.78	1.86	1.93	2.01	2.09	2.17	2.25	2.32
Montebello:															
Sept. 22	1.16	1.19	1.22												
Oct. 27	1.09	1.12	1.15												
Average for year	1.40	1.44	1.47												
Santa Fe Springs: Sept. 22	1.28	1.34	1.40	1.46	1.52	1.60	1.68	1.76	1.84	1.92	2.00				
Average for year	1.45	1.49	1.54	1.58	1.63	1.68	1.73	1.78	1.81	1.83	1.85				
Coyote Hills: Sept. 22	1.36	1.42	1.48												
Average for year	1.47	1.51	1.56												
Midway-Sunset-Elk Hills: Sept. 22	1.40	1.48	1.56	1.64		1.80									
Average for year	1.48	1.53	1.58	1.63	1.68	1.73									
Lost Hills: Sept. 22	1.40	1.48	1.56	1.64		1.80	1.88								
Average for year	1.48	1.53	1.58	1.63	1.68	1.73	1.78								
Coalinga: Sept. 22	1.19	1.24	1.29	1.34	1.39	1.44	1.49	1.54							
Average for year	1.42	1.46	1.51	1.55	1.59	1.63	1.67	1.72							

[1] Standard Oil Co. (California).

[2] Prices for grades 36° and lighter apply to Rosecrans-Athens only.

WELLS

The accompanying table, based on reports of companies that operate gathering lines, shows approximate number of producing oil wells in the United States on December 31, 1924 and 1925 and the average daily production per well.

Approximate number of producing oil wells in the United States, December 31, 1924 and 1925

State	1924		1925	
	Approximate number of wells	Average production per well per day (barrels)	Approximate number of wells	Average production per well per day (barrels)
Arkansas	3,050	33.5	4,100	49.5
California [1]	[1] 11,320	53.6	[1] 11,070	56.6
Colorado	70	25.8	80	64.1
Illinois	16,400	1.2	16,280	1.3
Indiana:				
Southwestern	1,020	1.5	990	1.7
Northeastern	1,120	.5	1,010	.4
Total Indiana	2,140	1.0	2,000	1.0
Kansas	18,000	4.0	18,600	5.6
Kentucky	12,450	1.5	13,100	1.3
Louisiana:				
Gulf coast	200	37.4	260	43.2
Northern	3,350	13.7	3,490	12.3
Total Louisiana	3,550	15.0	3,750	14.4
Montana	380	18.9	590	21.1
New Mexico	[2]		140	31.8
New York	15,000	.3	15,580	.3
Ohio:				
Central and eastern	20,900	.6	21,120	.7
Northwestern	18,000	.3	17,940	.3
Total Ohio	38,900	.5	39,060	.5
Oklahoma	60,500	8.1	59,400	7.7
Pennsylvania	74,350	.3	75,900	.3
Texas:				
Gulf coast	2,220	28.2	2,430	30.8
Rest of State	18,130	15.9	20,970	12.8
Total Texas	20,350	17.2	23,400	14.7
West Virginia	20,000	.8	19,940	.8
Wyoming	2,570	26.9	3,080	24.8
Other	[3] 70		[4] 30	
United States	299,100	6.2	306,100	6.5

[1] American Petroleum Institute; does not include wells temporarily shut in.
[2] Included under "Other."
[3] Alaska, New Mexico, Tennessee, and Utah.
[4] Alaska, Michigan, Tennessee, and Utah.

From 1859 to 1925 approximately 687,000 wells were drilled for oil and gas in the United States, of which nearly 137,000, or 20 per cent, were dry holes. The greatest activity in drilling was in 1920, when 33,911 wells were completed. High prices following the depletion of oil stocks during the war period caused this unusual activity.

Wells drilled for oil and gas in the United States, 1859–1925

Year	Wells completed	Dry holes	Year	Wells completed	Dry holes	Year	Wells completed	Dry holes
1859–1907	[1] 287,922	[1] 54,940	1914	23,137	4,142	1921	21,937	5,160
1908	16,909	3,214	1915	14,157	2,981	1922	24,689	5,332
1909	18,327	3,404	1916	24,619	4,039	1923	24,438	5,883
1910	14,940	2,422	1917	23,407	4,851	1924	21,888	5,044
1911	13,768	2,363	1918	25,687	5,613	1925	25,623	6,734
1912	17,180	2,855	1919	29,173	5,986			
1913	25,590	4,282	1920	33,911	7,364		687,302	136,609

[1] From Papers on the Conservation of Mineral Resources, U. S. Geol. Survey Bull. 394, 1909, pp. 30–50.

In 1925, 25,623 wells were drilled for oil and gas in the United States, exclusive of dry gas wells in California for which data are not available. The usual spring advances in prices of oil were reflected in more drilling during the period January to July, inclusive, with the peak of 2,638 wells for July as the highest figure to be recorded for any month since December, 1920. This stimulation of drilling was one of the causes for the August decline in price. Texas led the States in number of oil wells drilled in 1925, with 4,014; Oklahoma was second with 2,929. The leading counties or districts were as follows: Ouachita-Union (Smackover-El Dorado) Counties, Ark., 1,175 oil wells drilled; Bradford district, Pa.-N. Y., 1,115; Archer County, Tex., 831; Osage County, Okla., 592; Greenwood County, Kans., 503; Salt Creek-Teapot district, Wyo., 498.

Wells drilled for oil and gas in the United States, 1924–25, by months [1]

	January	February	March	April	May	June	July	August	September	October	November	December	The year
1924													
Oil	774	904	1,088	1,429	1,657	1,531	1,593	1,389	1,126	1,082	1,007	1,007	14,587
Gas	202	161	192	197	185	181	152	191	170	182	231	213	2,257
Dry	287	357	375	434	542	457	492	441	397	374	423	465	5,044
	1,263	1,422	1,655	2,060	2,384	2,169	2,237	2,021	1,693	1,638	1,661	1,685	21,888
1925													
Oil	884	993	1,091	1,568	1,675	1,709	1,791	1,581	1,504	1,420	1,196	1,147	16,559
Gas	165	171	185	203	177	184	207	206	183	205	231	213	2,330
Dry	376	432	492	594	601	578	640	701	590	603	593	534	6,734
	1,425	1,596	1,768	2,365	2,453	2,471	2,638	2,488	2,277	2,228	2,020	1,894	25,623

[1] 1924: California dry gas wells and dry holes not reported; 1925: California dry gas wells not reported.

Wells drilled for oil and gas in the United States in 1925, by States and by counties or districts [1]

	Oil	Gas	Dry	Total	Estimated average initial daily production per well (barrels)
Arkansas:					
Lafayette	1		16	17	20
Nevada	18		18	36	92
Ouachita	558	39	98	695	841
Stephens	8	1	4	13	47
Union	617	66	118	801	1,323
Miscellaneous			44	44	
Total, 1924	1,202	106	298	1,606	1,072
	1,152	49	184	1,385	179
California:					
Coalinga	20		2	22	19
Coyote	3			3	245
Dominguez	32		5	37	928
Elk Hills	28		3	31	332
Fullerton	7		1	8	822
Huntington Beach	42		11	53	219
Inglewood	178		13	191	1,137
Kern River	19		1	20	49
Long Beach	105		50	155	335
Los Angeles-Salt Lake	1			1	890
Lost Hills-Belridge	3			3	32
McKittrick	4	(2)	6	10	67
Midway-Sunset	182		27	209	285
Montebello	8		3	11	154
Newport	8		7	15	58
Richfield	9		4	13	401
Rosecrans	113		12	125	678
Santa Fe Springs	4		15	19	279
Santa Maria	9		5	14	155
Torrance	111		17	128	128
Ventura-Newhall	45		20	65	1,337
Wheeler Ridge	10		5	15	79
Whittier	7		9	16	97
Miscellaneous			122	122	
Total, 1924	948	(2)	338	1,286	535
	1,238	(2)	(2)	1,238	411
Colorado:					
Fremont	2		4	6	45
Larimer	8	1	4	13	679
Moffat	7		9	16	606
Pueblo	1		1	2	50
Routt	1		3	4	200
Miscellaneous		5	13	18	
Total, 1924	19	6	34	59	526
	4	2	5	11	2,333
Illinois:					
Clark	56		15	71	32
Crawford	26	3	5	34	13
Cumberland	4			4	3
Jackson	6			6	14
Lawrence	14		3	17	33
Marion	6		5	11	21
Wabash	57	2	31	90	139
Miscellaneous	1		11	12	5
Total, 1924	170	5	70	245	63
	116	2	55	173	44
Indiana:					
Northeastern—					
Adams	10		1	11	15
Allen	4			4	24
Delaware	3		5	8	11
Jay	26		7	33	17
Miscellaneous	2		3	5	4
Total, 1924	45		16	61	16
	68	5	19	92	43

[1] For States east of California, Oil and Gas Journal; for California, American Petroleum Institute.
[2] Not reported.

Wells drilled for oil and gas in the United States in 1925, by States and by counties or districts—Continued

	Oil	Gas	Dry	Total	Estimated average initial daily production per well (barrels)
Indiana—Continued.					
Southwestern—					
Daviess	5		1	6	39
Gibson	13		7	20	21
Pike	14		6	20	27
Sullivan	5	5	9	19	7
Miscellaneous			2	2	
Total, 1924	37	5	25	67	24
	25	6	27	58	22
Total Indiana, 1925	82	5	41	128	20
1924	93	11	46	150	37
Kansas:					
Anderson	221	3	27	251	65
Butler	80	2	70	152	79
Chase	8		6	14	151
Chautauqua-Elk	101	34	65	200	61
Coffey	7		6	13	54
Cowley	209	4	88	301	416
Greenwood	503	4	165	672	150
Harvey	1		6	7	25
Labette	3		1	4	86
Linn	2			2	73
Lyon	11		12	23	74
Marion	7	1	9	17	101
Montgomery-Wilson	23	20	62	105	83
Neosho-Allen	22	8	15	45	14
Rice	1			1	210
Russell	50	1	10	61	229
Sumner	4	2	20	26	99
Woodson	26	1	22	49	27
Miscellaneous	2	6	52	60	5
Total, 1924	1,281	86	636	2,003	162
	650	79	396	1,125	143
Kentucky:					
Allen	113		82	195	13
Barren	315	10	90	415	9
Cumberland-Monroe	42	3	28	73	66
Estill	14		2	16	3
Floyd	4	49	8	61	6
Hopkins	8			8	12
Lawrence-Johnson-Magoffin	218	6	18	242	16
Lee-Owsley	40	10	22	72	12
Logan	2		2	4	11
Metcalfe	1		3	4	15
Morgan	4		7	11	10
Owensboro	88	1	49	138	15
Russell	1		2	3	10
Warren	132		40	172	18
Wayne	48		31	79	13
Wolfe	9	1	1	11	10
Miscellaneous	21	19	33	73	7
Total, 1924	1,060	99	418	1,577	15
	1,176	61	368	1,605	22
Louisiana:					
Gulf coast—					
Edgerley	2		6	8	425
Jennings	23		6	29	150
Lockport	6		14	20	963
Vinton	42		21	63	413
Miscellaneous			16	16	
Total, 1924	73		63	136	375
	78		48	126	180

Wells drilled for oil and gas in the United States in 1925, by States and by counties or districts—Continued

	Oil	Gas	Dry	Total	Estimated average initial daily production per well (barrels)
Louisiana—Continued.					
Northern—					
Bellevue	12	2	8	22	15
Bossier	3	9	13	25	5
Caddo	60	10	11	81	68
Cotton Valley	117	9	7	133	145
La Salle	7		19	26	37
Miscellaneous	3	55	67	125	7
	202	85	125	412	107
Total, 1924	146	164	113	423	458
Total Louisiana, 1925	275	85	188	548	178
1924	224	164	161	549	362
Montana:					
Cat Creek	18		7	25	41
Stillwater	2	1	4	7	75
Sunburst	233	11	100	344	229
Miscellaneous	1	2	16	19	10
	254	14	127	395	214
Total, 1924	104	8	58	170	267
New Mexico:					
Artesia	135	1	14	150	121
San Juan	17		10	27	404
Miscellaneous			3	3	
	152	1	27	180	152
Total, 1924	11		2	13	210
Ohio:					
Central and eastern—					
Athens	33	49	40	122	7
Hocking	48	11	14	73	51
Holmes	74	93	40	207	32
Knox	22	12	3	37	8
Licking	160	23	14	197	27
Meigs	43	11	4	58	5
Monroe	17	1	7	25	6
Morgan	68	16	12	96	14
Noble	50	9	43	102	2
Perry	24	3	7	34	48
Washington	94	16	45	155	3
Wayne	13	33	14	60	28
Miscellaneous	75	144	82	301	7
	721	421	325	1,467	18
Total, 1924	656	519	376	1,551	16
Northwestern—					
Allen	45		4	49	13
Auglaize	45		13	58	17
Hancock	70	3	6	79	19
Hardin	23	3	4	30	27
Mercer	63	11	7	81	12
Ottawa	27		1	28	12
Paulding	21	1	1	23	21
Sandusky	50		3	53	7
Shelby	48	7	8	63	21
Van Wert	14		3	17	13
Wood	87		26	113	13
Miscellaneous	19	1	13	33	10
	512	26	89	627	15
Total, 1924	487	42	63	592	20
Total Ohio, 1925	1,233	447	414	2,094	17
1924	1,143	561	439	2,143	17

Wells drilled for oil and gas in the United States in 1925, by States and by counties or districts—Continued

	Oil	Gas	Dry	Total	Estimated average initial daily production per well (barrels)
Oklahoma:					
Carter	157	9	57	223	105
Creek	283	56	169	508	138
Garfield-Noble	179	10	46	235	1,128
Garvin	23	1	10	34	60
Jefferson	25	2	16	43	271
Kay	152	30	64	246	920
Muskogee-Wagoner	42	27	106	175	21
Nowata-Rogers	31	7	20	58	15
Okfuskee-Hughes-McIntosh	305	57	175	537	388
Okmulgee	296	48	198	542	151
Osage	592	54	197	843	150
Pawnee	106	10	63	179	182
Payne-Lincoln	125	19	37	181	401
Seminole	286	7	81	374	465
Stephens-Cotton	101	44	86	231	57
Tulsa	171	34	123	328	69
Washington	25	6	19	50	9
Miscellaneous	30	50	111	191	32
	2,929	471	1,578	4,978	300
Total, 1924	3,038	468	1,308	4,814	399
Pennsylvania and New York:					
Allegany	265	1	2	268	2
Bradford	1,115	12	19	1,146	3
Butler-Armstrong	88	47	44	179	3
Middle Field	104	11	11	126	5
Venango-Clarion	349	48	29	426	2
Southwestern Pennsylvania—					
Allegheny	22	29	4	55	5
Beaver	11	5	5	21	2
Greene	22	53	26	101	58
Washington	13	17	11	41	7
	1,989	223	151	2,363	3
Total, 1924	1,858	177	169	2,204	2
Tennessee:					
Clay	13	2	26	41	315
Morgan	6		2	8	22
Miscellaneous		2	7	9	
	19	4	35	58	222
Total, 1924	9		19	28	133
Texas:					
Gulf coast—					
Batson	48		14	62	276
Big Creek	9		18	27	669
Blue Ridge	6		3	9	1,204
Boling	1		2	3	2,600
Goose Creek	68		19	87	142
High Island	13		9	22	268
Hull	148		19	167	636
Humble	24		6	30	316
Orange	82		32	114	838
Piedras Pintas	1			1	1,000
Pierce Junction	10		8	18	1,123
Saratoga	22		12	34	73
Sourlake	41		11	52	72
South Liberty	139		37	176	789
Spindletop	40		11	51	93
West Columbia	13		13	26	43
Miscellaneous	59	9	71	139	8
	724	9	285	1,018	475
Total, 1924	544		292	836	783

Wells drilled for oil and gas in the United States in 1925, by States and by counties or districts—Continued

	Oil	Gas	Dry	Total	Estimated average initial daily production per well (barrels)
Texas—Continued.					
Rest of State—					
Archer	831		470	1,301	89
Brown	87	5	41	133	82
Callahan	64	3	24	91	134
Callihan	10	9	5	24	14
Carson	18	2	4	24	319
Crockett	1	1	4	6	45
Eastland	72	18	47	137	67
Freestone-Limestone	318	12	78	408	1,132
Gray	1	2	2	5	160
Hutchinson	13	4		17	227
Jim Hogg	89	12	9	110	326
Laredo	38	25	12	75	101
Lockhart	241		53	294	328
Luling	23		7	30	303
Mitchell	23		6	29	136
Montague	19	8	14	41	82
Navarro	138	7	73	218	64
Reagan	53	2	20	75	1,486
Rockdale-Minerva	82		8	90	20
Somerset	18		3	21	21
Shackelford	22	3	31	56	125
Stephens	97	26	82	205	225
Throckmorton	4	6	36	46	130
Wheeler	1	3	4	8	140
Wichita	438		212	650	40
Wilbarger	253	2	94	349	181
Young	306		244	550	119
Miscellaneous	30	22	231	283	63
Total, 1924	3,290 2,306	172 128	1,814 1,270	5,276 3,704	244 311
Total Texas, 1925	4,014	181	2,099	6,294	286
1924	2,850	128	1,562	4,540	401
Utah:					
San Juan	1			1	400
Miscellaneous		1	2	3	
Total, 1924	1 	1 (3)	2 (3)	4 (3)	400
West Virginia:					
Boone	10	28	3	41	30
Doddridge	56	21	16	93	20
Gilmer	14	24	6	44	5
Harrison	9	35	10	54	7
Kanawha	4	100	5	109	3
Lincoln	3	88	1	92	2
Marion	11	25	9	45	5
Marshall	32	23	7	62	14
Pleasants	23	10	19	52	6
Ritchie	44	48	42	134	12
Wetzel-Tyler	31	32	24	87	15
Wirt	15	2	3	20	2
Wood	39		13	52	3
Miscellaneous	88	133	37	258	11
Total, 1924	379 322	569 522	195 218	1,143 1,062	11 11
Wyoming:					
Big Horn Basin	13	4	10	27	200
Big Muddy	2			2	35
Carbon	2		4	6	20
Fremont	3		5	8	87
Lance Creek	3		2	5	582
Lincoln and Uinta	4		1	5	156
Lost Soldier	17	16	18	51	224

[3] Included under "Other States."

Wells drilled for oil and gas in the United States in 1925, by States and by counties or districts—Continued

	Oil	Gas	Dry	Total	Estimated average initial daily production per well (barrels)
Wyoming—Continued.					
Natrona	2		7	9	193
Osage	2		1	3	55
Rock Creek	4	2	11	17	121
Salt Creek-Teapot	498	1	6	505	121
Miscellaneous		4	9	13	
	550	27	74	651	128
Total, 1924	599	22	43	664	188
Other States,[4] 1925	2		9	11	30
1924		3	11	14	
United States, 1925	16,559	[5] 2,330	6,734	[5] 25,623	260
1924	14,587	[5] 2,257	[5] 5,044	[5] 21,888	

[4] 1924: Alabama, Mississippi, and Utah; 1925: Michigan and Mississippi.
[5] 1924: California dry gas wells and dry holes not reported; 1925: California dry gas wells not reported.

SPECIFIC GRAVITY OF CRUDE PETROLEUM

The accompanying table gives the estimated specific gravity of the crude petroleum produced in certain fields and districts, as reported by pipe-line and producing companies. The equivalents of "degrees A. P. I." in decimals representing specific gravity are taken from Bureau of Standards Circular 154, National Standard Petroleum Oil Tables.

Estimated average gravity of crude petroleum from various fields in the United States in 1925

District or grade	Degrees A. P. I.	Specific gravity	District or grade	Degrees A. P. I.	Specific gravity
Alaska: Katalla	44.0	0.806	California—Continued.		
Arkansas:			Santa Maria	16.9	0.954
El Dorado	34.0	.855	Sargent	16.0	.959
Irma	14.9	.967	Summerland	13.0	.979
Lisbon	36.0	.845	Torrance	20.7	.930
Smackover, light (range 24–29)	25.0	.904	Ventura	30.2	.875
Smackover, heavy (range 16–23.9)	20.0	.934	Wheeler Ridge	25.3	.902
Stephens	29.0	.882	Whittier	19.1	.940
California:			Colorado:		
Coalinga	18.9	.941	Florence	29.1	.881
Coyote	24.3	.908	Fort Collins	37.0	.840
Dominguez	32.4	.863	Iles Dome	35.0	.850
Elk Hills	22.5	.919	Moffat	41.0	.820
Huntington Beach	25.6	.901	Rangely	43.5	.809
Inglewood	19.5	.937	Tow Creek	35.0	.850
Kern River	14.0	.973	Illinois:		
Long Beach	25.8	.900	"Illinois"	33.0	.860
Los Angeles	14.8	.967	Plymouth	34.2	.854
Lost Hills-Belridge	25.5	.901	Waterloo	30.0	.876
McKittrick	14.8	.967	Indiana:		
Midway-Sunset	21.7	.924	Northeastern ("Indiana")	35.5	.847
Montebello	23.2	.915	Southwestern ("Princeton")	33.0	.860
Richfield	22.7	.918	Kansas:		
Rosecrans	33.0	.860	Augusta	34.0	.855
Santa Fe Springs	33.0	.860	Big Sandy	33.0	.860
			Eldorado	36.0	.845

Estimated average gravity of crude petroleum from various fields in the United States in 1925—Continued

District or grade	Degrees A. P. I.	Specific gravity
Kansas—Continued.		
Fox-Bush	39.0	0.830
Iola	19.0	.940
Legionville	26.5	.896
Lyon County	24.0	.910
Madison	41.0	.820
Matheson	33.0	.860
Paradise	40.5	.823
Peabody-Elbing	35.0	.850
Rainbow	41.0	.820
Russell County	39.0	.830
Virgil	38.0	.835
Kentucky:		
Ragland	23.2	.915
Ravenna	39.0	.830
Rodemer	29.0	.882
Scottsville	35.0	.850
Somerset (light)	39.0	.830
Somerset (medium)	35.5	.847
Warren County	36.0	.845
Louisiana:		
Bellevue	19.0	.940
Bull Bayou	39.5	.828
Caddo (light)	42.9	.811
Caddo (heavy)	26.2	.897
Cotton Valley	29.0	.882
De Soto	36.0	.845
Edgerley	21.0	.928
Elm Grove	30.5	.874
Haynesville	35.0	.850
Homer	36.0	.845
Jennings	24.5	.907
Lockport	24.8	.905
Urania	20.0	.934
Vinton	18.6	.943
Michigan: Saginaw	45.0	.802
Montana:		
Cat Creek	49.0	.784
Elk Basin	43.0	.811
Kevin-Sunburst	32.0	.865
Lake Basin	40.0	.825
New Mexico:		
Artesia	37.0	.840
Bloomfield	59.0	.743
Hogback	56.0	.755
Rattlesnake	64.8	.721
Table Mesa	64.0	.724
New York	42.0	.816
Ohio:		
Cleveland	38.2	.834
Corning	42.0	.816
Lima	36.3	.843
"Pennsylvania" (Macksburg)	42.5	.812
Wooster	38.1	.834
Oklahoma:		
Billings	41.0	.820
Blackwell	41.0	.820
Braman	41.0	.820
Bristow	33.0	.860
Burbank	38.0	.835
Cement	31.0	.871
Cleveland	37.5	.837
Cromwell	37.0	.830
Cushing	39.0	.830
Davenport	43.2	.810
Duncan	36.0	.845
Fox	21.7	.924
Garber	43.0	.811
Garvin	24.0	.910
Glenn	34.0	.855
Healdton	29.5	.879
Hewitt	34.0	.855
Keywest	41.5	.818
Lyons	39.5	.828
Papoose	38.5	.832
Ponca	40.0	.825
Thomas	42.0	.816
Tonkawa	42.0	.816
Walters	31.0	.871
Wetumka	40.0	0.825
Wewoka	37.5	.837
Wheeler	21.7	.924
Pennsylvania:		
Franklin	29.5	.879
"Pennsylvania"	42.0	.816
Tennessee:		
Glen Mary	39.0	.830
Tinsleys Bottom	43.2	.810
Texas:		
Batson	20.6	.930
Big Creek	24.0	.910
Big Lake	38.2	.834
Blue Ridge	25.0	.904
Boling	29.0	.882
Breckenridge	38.0	.835
Bruni	18.0	.947
Burkburnett	38.0	.835
Calliham	18.5	.943
Carson County	37.0	.840
Crane-Upton	30.0	.876
Crockett	30.0	.876
Currie	42.0	.816
Damon Mound	21.5	.925
Electra	40.0	.825
Goose Creek	24.0	.910
Gray County	32.0	.860
High Island	31.0	.871
Holliday	39.0	.830
Howard County	31.0	.871
Hull	22.5	.919
Humble	23.0	.916
Hutchinson County	35.0	.850
Iatan	28.4	.885
Lela	33.5	.858
Luling	26.8	.894
Lytton Springs	38.0	.835
Mexia	36.5	.832
Minerva	38.0	.835
Mirando	23.0	.916
Moore	34.5	.852
Nocona	22.0	.922
Orange	22.7	.918
Piedras Pintas	42.0	.816
Pierce Junction	23.5	.913
Pioneer	41.5	.818
Powell	37.5	.837
Randado	21.0	.928
Ranger	37.5	.837
Richland	39.0	.830
Saratoga	19.0	.940
Shackelford	38.0	.835
Somerset	33.0	.860
Sourlake	21.7	.924
South Liberty	22.3	.920
Spindletop	22.5	.919
Swastika	40.0	.825
Westbrook	25.0	.904
West Columbia	22.8	.917
Wortham	38.5	.832
West Virginia:		
Cabell	39.3	.829
Cabin Creek	48.0	.788
Kellys Creek	45.0	.802
"Pennsylvania"	43.0	.811
Volcano	29.0	.882
Wyoming:		
Big Muddy	33.0	.860
Byron	41.0	.820
Elk Basin	43.0	.811
Ferris	35.0	.850
Grass Creek (light)	45.0	.802
Grass Creek (heavy)	21.0	.928
Greybull	45.0	.802
Hamilton Dome	25.0	.904
La Barge	30.0	.876
Lance Creek	42.0	.816
Lander	23.0	.916
Lost Soldier	31.5	.868

Estimated average gravity of crude petroleum from various fields in the United States in 1925—Continued

District or grade	Degrees A. P. I.	Specific gravity	District or grade	Degrees A. P. I.	Specific gravity
Wyoming—Continued.			Wyoming—Continued.		
Notches	23.0	0.916	Rock Creek	37.4	0.838
Osage	38.0	.835	Salt Creek	37.0	.840
Pilot Butte	33.0	.860	Simpson Ridge	21.9	.835
Poison Spider	15.0	.966	Spring Valley	42.0	.816
Rex Lake	32.3	.864	Teapot	36.4	.843

PRODUCTION OF PETROLEUM AND ROYALTIES FROM WELLS UNDER FEDERAL CONTROL

The following tables have been compiled from data received by the Bureau of Mines, United States Geological Survey, and Office of Indian Affairs:

Crude petroleum produced on Government lands, 1924–25, under the operation of the leasing act of February 25, 1920

[Figures for 1924 from Bureau of Mines; for 1925 from U. S. Geological Survey]

State and land office	1924			1925		
	Production (barrels)	Royalty		Production (barrels)	Royalty	
		Barrels	Value		Barrels	Value
California:						
Los Angeles	1,483,772.66	173,913.17	$191,647.65	1,379,089.93	175,778.94	$231,235.01
Visalia, outside naval reserves	4,900,671.10	633,096.12	653,483.86	4,962,696.06	670,292.67	814,054.19
Visalia, inside naval reserves	12,028,336.16	2,973,508.72	3,241,465.90	11,738,772.00	2,649,164.95	3,443,043.16
	18,412,779.92	3,780,518.01	4,086,597.41	18,080,557.99	3,495,236.56	4,488,332.36
Colorado: Glenwood Springs	270,004.53	27,370.87	28,950.25	556,825.82	31,326.21	40,156.61
Louisiana: Baton Rouge	1,223.17	152.89	219.22	2,064.87	258.12	511.79
Montana:						
Billings				1,282,056.78	89,805.42	230,655.92
Great Falls	253,422.24	14,837.68	14,917.65	425,173.62	28,444.46	44,893.97
Lewistown	1,260,675.67	71,561.74	154,653.93	352,266.63	20,388.23	48,232.34
	1,514,097.91	86,399.42	169,571.58	2,059,497.03	138,638.11	323,782.23
New Mexico: Las Cruces				3,753.50	430.79	616.26
Oklahoma: Guthrie				10,828.32	1,448.01	3,315.91
Utah: Salt Lake City				2,496.41	499.29	499.29
Wyoming:						
Buffalo				38,139.82	4,764.59	9,647.61
Cheyenne, outside naval reserves	60,053.35	3,081.02	2,952.18	13,373,292.13	2,263,891.96	4,288,307.44
Cheyenne, inside naval reserves				393,375.36	49,171.93	89,011.57
Douglas, outside naval reserves	26,803,870.11	5,454,464.18	9,075,766.64	6,327,903.79	1,174,106.44	2,103,266.33
Douglas, inside naval reserves	1,003,757.19	128,212.29	204,097.56	239,326.30	29,915.79	50,222.83
Evanston	1,129.00	166.25	324.51	10,742.00	1,123.76	1,954.80
Lander	487,507.39	61,867.91	92,783.86	360,304.56	47,793.00	83,044.15
Newcastle	58,176.61	7,312.06	11,176.65	58,620.25	7,316.20	12,833.29
	28,414,493.65	5,655,103.71	9,387,101.40	20,801,704.21	3,578,083.67	6,638,288.02
	48,612,599.18	9,549,544.90	13,672,439.86	41,517,728.15	7,245,920.76	11,495,502.47

Royalty receipts from production of oil and gas and bonuses paid for sale of leases on Indian reservations, fiscal years ended June 30, 1924 and 1925

[From Office of Indian Affairs]

Reservation	1924			1925		
	Oil and gas land leased during year (acres)	Receipts		Oil and gas land leased during year (acres)	Receipts	
		Bonus from sale of leases	Royalty from production		Bonus from sale of leases	Royalty from production
Five Civilized Tribes:						
Oil	111,582	$242,989	$2,302,767	80,001	$247,260	$2,964,242
Gas			128,038			152,628
Crow: Oil	3,138	157	245	1,100		12
Kiowa:						
Oil	43,285	42,059	11,102	3,477	3,752	12,215
Gas			1,563			2,799
Navajo (Pueblo Bonito): Oil				1,120	700	
Navajo (San Juan): Oil						50,371
Osage:						
Oil	51,142	11,804,104	10,776,307	20,175	[1] 14,577,607	9,793,073
Gas						1,351,510
Pawnee:						
Oil	2,758	11,326	271,733	3,825	28,776	119,842
Gas			7,813			3,289
Ponca and Otoe:						
Oil	623	13,724	53,865	8,920	20,133	86,642
Gas			1,164			1,657
Seger: Oil	1,840	3,295				
Shawnee:						
Oil	8,214	16,552	7,569	15,457	49,060	6,994
Gas						600
Shoshone: Oil	6,224	11,726	6,110	890	3,342	5,497
Ute: Oil				13,840	38,600	
	228,806	12,145,932	13,568,276	148,805	14,969,230	14,551,371

[1] Including deferred payments.

SUMMARY OF REFINERY STATISTICS

Refinery statistics, combined with statistics of crude petroleum, are issued monthly by the Bureau of Mines. No attempt is made here to present other than an abbreviated summary of the major refined products such as has been published for a number of years in similar reports; details will be found in the report on refinery statistics, 1916–1925.

Runs of crude petroleum to stills in the United States in 1925 amounted to 698,582,000 barrels of domestic crude petroleum and 41,338,000 barrels of foreign crude petroleum, a total of 739,920,000 barrels—an increase over 1924 of 96,201,000 barrels, or 15 per cent.

From the total crude petroleum run to stills there was recovered as gasoline 259,601,000 barrels, or 35 per cent; 59,689,000 barrels as kerosene, or 8 per cent; 364,991,000 barrels as gas and fuel oils, or 49 per cent; and 31,055,000 barrels as lubricants, or 4 per cent. Losses in refining totaled 22,914,000 barrels, equivalent to 3 per cent of the total crude oil run to stills.

The demand for gasoline continued to feature the marketing of refined products. Total domestic demand in 1925 was 223,865,000 barrels, as compared with 185,003,000 barrels in 1924, a gain of 21 per cent. Exports of gasoline were 31,497,000 barrels, an increase over 1924 of 9 per cent. The decided increase in total demand did not cause a reduction of stocks; on the contrary, stocks increased

26 per cent. This apparent abundance of gasoline was due primarily to increased runs to stills but also to increased recovery by cracking.

The statistical position of kerosene changed very little during the year. Production and exports fell off slightly, but domestic demand increased and stocks decreased. The production and domestic demand for lubricants registered moderate gains in 1925; consumption was divided chiefly between motor vehicles and industrial uses. The total consumption did not keep pace with the increased number of motor cars or the larger demand for gasoline, since manufacturing in general did not have a growth like that of the automobile industry in 1925. Furthermore, lubricating oil, being higher in price and less volatile than kerosene or gasoline, is less subject to wasteful use.

Refinery statistics, 1919–1925

[Thousands of barrels of 42 U. S. gallons except as otherwise indicated]

	1919	1920	1921	1922	1923	1924	1925
Crude oil run to stills:							
Domestic	361, 520	433, 915	443, 363	425, 823	538, 252	597, 954	698, 582
Foreign				74, 883	42, 986	45, 765	41, 338
	361, 520	433, 915	443, 363	500, 706	581, 238	643, 719	739, 920
Natural-gas gasoline run to stills or blended at refineries	2, 957	3, 153	2, 517	3, 662	5, 487	12, 671	19, 636
Stocks of crude oil (domestic and foreign) at refineries at end of year	13, 143	21, 261	26, 562	33, 805	33, 259	40, 995	(1)
Gasoline:							
Produced	94, 235	116, 251	122, 704	147, 672	179, 903	213, 326	259, 601
Imported	203	964	900	1, 479	4, 555	3, 453	3, 813
Exported [2]	9, 097	15, 636	13, 134	14, 156	20, 741	28, 967	31, 497
Consumed	81, 783	101, 208	107, 525	127, 906	156, 746	185, 003	223, 865
Stocks at refineries at end of year	10, 638	11, 009	13, 954	21, 043	28, 014	30, 823	38, 875
Kerosene:							
Produced	55, 753	55, 240	46, 313	54, 913	55, 927	60, 026	59, 689
Imported	(3)	(3)	(3)	[4] 3	7	10	19
Exported [2]	23, 536	20, 878	18, 016	21, 489	20, 347	21, 961	21, 212
Consumed	33, 188	33, 082	29, 537	34, 854	35, 048	36, 712	39, 969
Stocks at refineries at end of year	8, 079	9, 359	8, 119	6, 692	7, 231	8, 594	7, 121
Gas and fuel oils:							
Produced	181, 602	210, 987	230, 091	254, 910	287, 481	320, 476	364, 991
Imported	(3)	(3)	(3)	[4] 2, 947	12, 286	12, 927	12, 245
Exported [2]	16, 487	22, 080	22, 676	18, 479	33, 372	37, 249	36, 088
Consumed	163, 803	185, 972	195, 656	240, 010	261, 388	292, 452	(1)
Stocks at refineries at end of year	17, 003	19, 938	31, 697	31, 065	36, 072	39, 774	(1)
Lubricants:							
Produced	20, 161	24, 938	20, 896	23, 304	26, 128	27, 498	31, 055
Imported	(3)	(3)	(3)	[4] 43	29	11	37
Exported [2]	6, 598	9, 643	6, 936	7, 941	8, 372	9, 103	9, 678
Consumed	13, 600	14, 742	12, 047	15, 528	17, 260	18, 124	20, 581
Stocks at refineries at end of year	3, 269	3, 822	5, 735	5, 613	6, 138	6, 420	7, 253
Wax (thousands of pounds):							
Produced	467, 235	541, 204	434, 884	462, 003	466, 647	516, 491	590, 577
Stocks at refineries at end of year	222, 462	195, 368	207, 563	204, 891	164, 758	89, 706	116, 391
Coke (thousands of short tons):							
Produced	603. 5	576. 6	604. 5	707. 1	672. 5	761. 1	991. 0
Stocks at refineries at end of year	21. 1	31. 5	74. 5	35. 7	26. 3	97. 8	238. 4
Asphalt (thousands of short tons):							
Produced [5]	901. 9	1, 290. 6	1, 214. 5	1, 895. 3	2, 327. 1	2, 545. 6	2, 677. 4
Stocks at refineries at end of year	73. 4	81. 1	98. 3	119. 6	118. 1	97. 3	159. 4
Losses [6]	16, 015	18, 743	19, 558	18, 562	18, 921	19, 590	22, 914

[1] Figures not available.
[2] Including shipments to Alaska, Hawaii, and Porto Rico.
[3] No data available prior to change in tariff, Sept. 22, 1922.
[4] Sept. 22 to Dec. 31.
[5] Figures for production of asphalt as given in the chapter on asphalt and related bitumens differ from the figures given here mainly because of differences in classification of liquid products.
[6] Difference between total runs to stills and the volume of the classified products reported.

OIL SHALE AND SHALE OIL

Although research in regard to the extraction of oil from shale was as active in 1925 as in the preceding year, the actual production of shale oil was considerably less than the 600,000 gallons produced in 1924. The production for 1925 was reported from one plant in California—that of the N-T-U Co., which was built in 1922 near Santa Maria. The salient points of operation of the process used by this company are described by Smith, Emery & Co., September 14, 1923, in part, as follows:

> The N-T-U Co.'s process employs a cylindrical retort, of 40 tons capacity, having an inclosed grate at the bottom, connected with a suction fan, which creates a down draft within the retort, passing out through the grate and a set of condenser tubes and scrubbers. The manner of operation is as follows:
>
> The generator is filled with shale crushed to a maximum size of 2 inches. A fire is kindled on top of the charge by means of wood fuel and about a gallon of crude oil. The suction fan is turned on, drawing the heat of this combustion down through the charge of shale. In about three minutes the shale at the top of the charge is burning strongly, and the cover of the generator is then closed so that only enough air is admitted to support slow combustion, which is allowed to continue only on the fixed carbon in the shale.
>
> The volatile matter is carried off at a comparatively low temperature by the hot flue gases and is caught in passing through the water-cooled condenser and scrubbers. A part of this flue gas is mixed with the air entering the generator and serves to increase the volume of gases passing through the charge without accelerating the combustion. As the distillation proceeds, the fire zone gradually moves down through the charge, driving off the oil some distance in advance. A sudden rise of temperature at the grate indicates completion of the distillation. The blower is stopped and the entire grate is rolled back by means of a motor-operated screw, allowing the spent shale to drop clear of the generator while hot. The grate is then returned to position and is ready for the succeeding charge. The cycle requires about 24 hours.
>
> It should be noted that the shale itself furnishes the fuel for this process; there is no external heating required; the only moving part during distillation is the suction fan which handles the cooled gases from the condenser; the grate and its moving mechanism are not subject to excessive heat nor to wear by abrasion from the shale.

The percentage recovery from this process is reported to be 90 per cent; that is, 36 barrels to the 40-ton charge. The crude oil obtained has a gravity of about 12° and yields 15 to 16 per cent of gasoline when refined.

At the suggestion of the committee appointed by the President to determine the possibilities of a future supply of oil for the Navy, Congress appropriated $90,000 to the Bureau of Mines in March, 1925, "for development of oil shale including construction of necessary plant, purchase or mining of shale, operation of plant, and for necessary expenses incident thereto." A site for pilot plant was selected on naval oil shale reserve No. 3 near Rulison, Colo., and during the fiscal year a trail was constructed from the plant site to the mine site, a road was built from Rulison to the plant site, plant buildings were erected, and equipment was purchased, including a retort of the Scottish type and one of an American type, also equipment for an aerial tramway. At the end of the year the plant was still under construction.

84642°—28——25

World's production of oil shale, 1921–1925, in metric tons [1]

Country	1921	1922	1923	1924	1925
Australia:					
New South Wales	33,009	23,844	1,226	652	
Tasmania	882	41	1,119	1,601	833
Estonia	95,514	138,922	214,099	233,631	239,520
France	64,693	61,000	62,142	(2)	(2)
Germany (Bavaria)	379	33	1,202	530	400
Italy	3,030	5,476	5,662	2,987	2,700
Russia	19,300	18,500	24,200	(2)	(2)
Spain	(3)	(3)	(3)	(3)	(3)
Sweden	(4)	(4)	(4)	(4)	(2)
United Kingdom:					
England			71		(2)
Scotland	1,896,860	2,645,790	2,906,475	2,902,960	(2)
United States	(2)	(2)	[5] 9,300	[5] 21,200	(6)

[1] Compiled by L. M. Jones, of the Bureau of Mines.
[2] Data not available.
[3] There is in operation in Puertollano a plant for the treatment of oil shale and impure coal to obtain oil, but no details of production are available.
[4] Data on production of oil shale not available; the following quantities of shale oil were extracted from alum shale: 1921, 328 metric tons; 1922, 353 tons; 1923, 158 tons. No oil was extracted in 1924.
[5] Estimated. Used in production of shale oil.
[6] Produced by one company; figures confidential and can not be disclosed.

PROPERTIES OF TYPICAL CRUDE OILS FROM VARIOUS FIELDS OF THE UNITED STATES

A summary of the results of analyses made by the Bureau of Mines of crude petroleum from the outstanding fields of the United States is given below. These data were obtained by laboratory tests (distillation by Hempel method) and should be used, therefore, only as an indication of properties in actual practice.

Properties of typical crude oils from fields of the United States

Sample No.	State	County	Field or district	Sand or depth	Properties of crude					Gasoline fraction		Kerosene fraction		Viscosity at 100° F. of vacuum fractions			Carbon residue, per cent
					Specific gravity	Degrees A. P. I.	Sulphur content	Viscosity at 100° F.	Pour test, ° F.	Per cent	Specific gravity	Per cent	Specific gravity	225 to 250° C.	250 to 275° C.	275 to 300° C.	
23276	Alaska		Katalla		0.811	43.0	0.12	33	10	45.8	0.742	11.4	0.819	64	98	168	9.0
23275	Arkansas	Nevada	Irma		.970	14.4	2.66	5,700	20					103	175	245	17.0
717	do	Union	El Dorado		.853	34.4	.79	48	(1)	28.8	.736	7.7	.817	58	78	165	11.0
26268	do	do	Smackover	Blossom, 2,534 to 2,565 feet.	.914	23.3	2.07	146	(1)	14.5	.782			65	99	175	12.4
23–463	do	do	Woodley	2,220 feet	.929	20.8	1.94	306	(1)					64	105	224	12.7
459	California	Fresno	Coalinga		.919	22.5	.71	105	(1)	9.2	.782			69	168	(2)	9.0
1126	do	Kern	Elk Hills		.915	23.1	.68	102	(1)	12.3	.781			90	166	(2)	10.0
1105	do	do	McKittrick		.965	15.1	1.02	1,600	(1)	2.1	.810			138	395	(2)	12.0
476	do	do	Sunset-Midway		.981	12.7	1.16	6,000	45					203	352	(2)	15.1
474	do	do	Sunset		.878	29.7	.73	162	(1)	17.0	.777			104	194	(2)	16.4
1143	do	Los Angeles	Coyote Hills	3,200 to 4,000 feet	.899	25.9	1.46	98	35	20.5	.764	4.7	.819	67	113	238	12.8
24492	do	do	Dominguez		.860	33.0	.93	47	(1)	34.5	.762	5.0	.824	65	107	227	11.5
23511	do	do	Long Beach	3,545 feet	.897	26.3	1.29	114	(1)	19.8	.755	3.7	.823	67	115	354	13.4
23512	do	do	do	5,017 feet	.872	30.8	.80	58	20	29.3	.757	4.4	.818	65	108	232	12.5
487	do	do	Montebello	2,400 feet	.916	23.0	.75	133	(1)	10.6	.800			72	128	229	10.4
23514	do	do	Santa Fe Springs	Bell	.888	27.9	.54	60	35	18.8	.788			65	105	250	10.3
23513	do	do	do	Meyer	.851	34.8	.45	42	15	36.7	.760	5.3	.819	61	96	262	10.1
24489	do	do	Torrance	Del Amo, 3,300 to 3,700 feet.	.904	25.0	1.58	112	(1)	19.4	.774			73	141	314	13.2
23526	do	Orange	Huntington Beach	4,200 feet	.922	22.0	2.07	259	(1)	16.7	.769	3.3	.825	70	118	307	14.1
1141	do	do	Richfield	3,800 to 4,400 feet	.899	25.9	1.60	106	15	25.2	.752	3.8	.821	73	136	267	17.2
1163	do	Santa Barbara	Santa Maria	1,500 to 3,000 feet	.916	23.0	2.63	252	(1)	21.8	.768			78	154	321	15.5
1148	do	Ventura	Ventura	3,600 to 3,850 feet	.875	30.2	1.15	80	35	28.6	.749	4.4	.820	65	105	225	15.1
579	Colorado	Fremont and Pueblo.	Florence		.880	29.3	.17	67.4	43	8.9	.758	14.5	.808	64	89	160	6.0
24758	do	Larimer	Fort Collins	Muddy, 4,474 feet	.847	35.6	.11	42	45	30.6	.744	10.1	.813	57	75	116	6.2
24783	do	Moffat	Moffat	Dakota, 3,805 to 3,825 feet.	.823	40.4	.05	37	45	36.9	.740	11.4	.814	60	51	120	3.9
600	do	Rio Blanco	Rangely		.819	41.3	.06	37.4	12	34.6	.748	19.3	.810	59	84	126	2.6
396	Illinois	Lawrence et al			.863	32.5	.24	57.0	(1)	20.4	.769	4.5	.821	59	81	148	10.6
392	Indiana	Allen et al	Lima		.846	35.8	.48	49.6	(1)	26.0	.753	11.8	.812	51.9	85.3	140	6.0
586	Kansas	Butler	Augusta		.865	32.1	.41	56.4	32	24.2	.761	6.3	.814	62	92	153	10.2
587	do	do	Eldorado		.853	34.4	.29	46.8	14	27.3	.754	13.2	.815	62	95	167	11.5
581	do	Chautauqua	Peru Sedan		.875	30.2	.25	70.2	10	19.0	.760	10.4	.816	62	103	162	10.7
584	do	Cowley	Peacock		.853	34.4	.23	49.2	14	25.9	.763	13.1	.814	64	94	154	8.68

[1] Below 5° F. [2] More than 400 seconds Saybolt at 100° F. [3] 60 seconds Saybolt at 212° F.

Properties of typical crude oils from fields of the United States—Continued

Sample No.	State	County	Field or district	Sand or depth	Properties of crude					Gasoline fraction		Kerosene fraction		Viscosity at 100° F. of vacuum fractions			Carbon residue, per cent
					Specific gravity	Degrees A. P. I.	Sulphur content	Viscosity at 100° F.	Pour test, ° F.	Per cent	Specific gravity	Per cent	Specific gravity	225 to 250° C.	250 to 275° C.	275 to 300° C.	
594	Kansas	Greenwood	Teeter		0.841	36.8	0.19	41.8	23	30.1	0.752	12.5	0.812	58	85	134	6.73
603	do	Miami	Osawatomie		.892	27.1	.57	131.0	(1)	17.1	.753	10.9	.812	64	102	182	16.12
24713	do	Russell	Russell	Oread limestone, 2,998 to 3,037 feet.	.820	41.1	.41	20	(1)	33.1	.731	17.2	.810	60	83	144	11.7
407	Kentucky	Bath	Ragland		.902	25.4	.31			12.6	.767	9.3	.818	64	94	187	17.7
409	do	Lawrence	Olympic		.835	38.0	.21	43.0	(1)	33.1	.744	11.2	.812	66.7	97.6	158.2	5.5
399	do	Lee and Estill	Big Sinking		.844	36.2	.14	45.0	(1)	31.2	.751	10.8	.810	59.1	97.8	150.8	7.5
945	Louisiana	Acadia	Jennings	1,963 feet	.908	24.3	.36	83	(1)					97	181	(2)	7.4
0026	do	Bossier	Bellevue		.942	18.7	.70							100	165	(2)	10.2
715	do	Caddo	Caddo light		.820	41.1	.21	44.6	18	35.2	.748	22.4	.795	61	94	148	7.3
718	do	do	Pine Island		.901	25.6	.42	125	(1)	3.0	.828			78	119	195	5.1
756	do	Calcasieu	Vinton	1,900 feet	.936	19.7	.33	310	(1)					108	232	(2)	8.0
711	do	Claiborne	Homer		.844	36.2	.63	45.8	(1)	30.2	.736	10.3	.805	61	87	149	8.2
24466	do	Webster	Cotton Valley	2,520–2,542 feet	.880	29.3	.34	165	65	1.9	.825			58	83	125	6.7
26535	Michigan	Saginaw	Saginaw	Berea, 1,835–1,873 feet.	.798	45.8	.23	34	(1)	46.1	.736	13.2	.808	62	101	202	5.7
23036	Montana	Fergus	Cat Creek	Average sample	.780	49.9	.32			61.1	.744	27.2	.812				
24705	do	Sweetgrass	Lake Basin		.797	46.0	.07	34	60	36.6	.736	19.2	.799	51	61	{212 F / 40}	2.4
24155	do	Toole	Kevin-Sunburst	Ellis, 1,685 feet	.872	30.8	1.30	47	(1)	23.1	.743	4.9	.820	66	104	198	7.5
24152	do	do	do	Sunburst, 1,277–1,292 feet.	.855	34.0	.96	43	(1)	25.0	.750	13.1	.813	60	90	159	6.4
25226	New Mexico	Eddy	Artesia	Penn, 1,963–2,003 feet.	.865	32.1	1.02	47	15	25.8	.773	5.8	.812	61	91	152	9.6
0075	do	San Juan	Navajo (Hogback)		.735	61.0	.05	30	(1)	70.8	.702	12.1	.810				
376	New York	Allegany			.828	39.4	.10	43.6	(1)	30.0	.748	17.5	.802	53	73	118	2.9
391	Ohio	Allen	North Lima		.835	38.0	.55	42.4	(1)	31.0	.749	19.2	.815	51.8	82.7	139.4	6.2
394	do	Washington			.838	37.4	.10	47.8	7	27.8	.740	17.0	.805	59	79	129	7.4
393	do	do			.805	44.3	.05	38.6	(1)	33.5	.739	20.2	.798	50.5	89	128.7	3.1
647	Oklahoma	Caddo	Cement		.852	34.6	.19	55.4	(1)	20.2	.766	20.7	.809	65	100	122	9.7
646	do	Carter	Healdton		.870	31.1	.72	64.2	(1)	22.3	.753	9.7	.818	71	111	193	8.99
645	do	do	Hewitt		.858	33.4	.72	58.4	(1)	26.6	.737	9.3	.810	65	103	182	10.8
648	do	Cotton	Walters		.859	33.2	.42	52.8	14	27.7	.747	11.2	.805	65	101	181	11.7
619	do	Creek	Cushing		.828	39.4	.28	37.0	(1)	37.5	.743	12.4	.812	59	89	161	6.8
736	do	Creek and Tulsa	Glenn		.862	32.7	.30	52.4	(1)	24.8	.762	15.9	.814	67.1	101	186	9.3
732	do	Creek	North Bristow		.824	40.2	.25	36.6	(1)	38.8	.743	12.0	.814	63.8	92.4	173	7.6
768	do	Garfield	Garber		.799	45.6	.14	34	(1)	52.4	.737	10.6	.809	66	99.2	149	5.7
25335	do	Hughes	Papoose and Gilcrease.	Papoose, 3,326–3,352 feet.	.865	32.1	.10	69	40	8.6	.785	12.8	.810	57	80	123	3.06

615	do	Kay	Blackwell or Dilworth.		.830	39.0	.24	38.4	5	36.3	.748	12.3	.810	65	96	165	7.85
24476	do	do	Tonkawa	Slick, 4,060–4,081 feet.	.816	41.9	.16	34	(1)	40.8	.743	11.8	.812	58	78	122	4.0
24757	do	Murray	Scotts Dome	Simpson, 1,218–1,268 feet.	1.002	10.0	1.32	76,000	60					64	216	(2)	27.4
24476A	do	Noble	Tonkawa	Tonkawa, 2,614–2,628 feet.	.815	42.1	.37			41.7	.744	17.6	.816	54	72	125	5.2
591	do	do	Billings		.823	40.4	.16	38.0	5	40.4	.739	12.1	.814	58	78	122	3.58
744	do	Okfuskee	Lyons		.836	37.8	.14	43.6	(1)	28.3	.752	11.7	.811	67.3	89.5	154	2.6
739	do	Okmulgee	Okmulgee		.854	34.2	.13	56.5	(1)	17.3	.759	10.4	.808	67.5	91.3	153	3.0
625	do	Osage	Bigheart		.846	35.8	.19	42.2	14	28.1	.754	5.7	.812	60	100	170	5.3
770	do	do	Burbank		.837	37.6	.32	43.0	10	29.7	.746	11.0	.815	65.2	104	181	6.2
617	do	do	Osage		.846	35.8	.23	43.2	12	28.9	.751	11.7	.817	66	103	170	5.75
623	do	Pawnee	Cleveland		.841	36.8	.26	40.6	21	30.6	.753	13.0	.814	65	120	187	7.84
24486	do	Seminole	Cromwell	Wilcox	.830	39.0	.14	40.0	(1)	34.5	.744	10.8	.815	61	95	173	4.2
650	do	Stephens	Duncan		.848	35.4	.40	45.8	10	31.4	.746	11.6	.808	68	117	182	10.6
771	do	Washington	Bartlesville		.871	31.0	.25	61.2	20	19.0	.779			71.5	108	195	8.1
26534	Pennsylvania	McKean	Bradford	Bradford 1,799–1,850 feet.	.797	46.0	.10	38	(1)	33.6	.728	16.1	.798	55	79	120	1.6
380	do	Mercer			.863	32.5	.09	97.2	(1)	9.0	.824			67.1	92.1	132.4	2.2
379	do	Venango			.832	38.6	.08	47.4	(1)	24.4	.761	16.4	.811	53.5	77.4	113.4	2.0
688	Texas	Archer	Holliday		.839	37.2	.41	39.0	(1)	38.2	.734	10.5	.811	64	98	182	10.6
759	do	Atascosa	Somerset	1,600 feet	.823	40.4	.42	38.0	(1)	38.8	.735	18.3	.812	62	87	143	10.8
789	do	Brazoria	Damon Mound	3,212 feet	.923	21.8	.28	110	(1)					110	221	(2)	3.1
792	do	do	West Columbia	3,150 feet	.934	20.0	.29	251	5					121	261	(2)	8.8
696	do	Eastland	Ranger		.840	37.0	.17	40	(1)	30.2	.759	13.1	.815	70	104	179	3.9
798	do	Hardin	Saratoga	1,000 feet	.977	13.3	.57	1,500	(1)					163	(2)	(2)	11.5
746	do	Harris	Goose Creek	2,000 feet	.926	21.3	.22	194	(1)					118	238	(2)	5.5
781	do	do	do	4,350 feet	.897	26.3	.55	61	7					89	178	(2)	4.5
784	do	do	Humble	4,194 feet	.948	17.8	2.40	358	(1)	3.7	.823			103	216	(2)	8.0
24191	do	Hutchinson	Panhandle	2,800–2,820 feet	.839	37.2	.59	56	25	22.3	.741	16.1	.814	56	76	109	5.1
978	do	Jefferson	Spindletop	800 feet	.936	19.7	2.31	197	(1)					126	267	(2)	9.7
794	do	Liberty	Hull	3,300 feet	.926	21.3	.44	285	(1)	3.8	.800			104	222	(2)	8.3
705	do	Limestone	Mexia		.847	35.6	.19	45.6	21	17.3	.768	28.4	.807	63	92	170	9.9
23–433	do	Mitchell	Westbrook	Morrison	.900	25.7	2.63	53	(1)	28.2	.762			57	83	126	17.3
703	do	Navarro	Corsicana		.855	34.0	.24	50.4	19	19.7	.765	23.8	.811	63	106	188	9.9
24876	do	do	Powell	Woodbine, 2,846–2,864 feet.	.855	34.0	.25	49.0	40	19.4	.745	21.7	.797	66	101	186	10.2
909	do	Orange	Orange	3,680–3,694 feet	.912	23.7	.45	153	(1)					92	179	350	6.0
23–431	do	Reagan	Big Lake	3,023–3,025 feet	.843	36.4	.49	43	(1)	33.6	.750	4.9	.820	57	86	150	4.3
694	do	Stephens	Breckenridge		.844	36.2	.28	40	(1)	30.0	.757	12.4	.815	57	93	156	5.3
651	do	Wichita	Burkburnett		.838	37.4	.38	39.2	(1)	36.3	.749	12.3	.816	64	98	183	11.1
692	do	do	Electra		.824	40.2	.25	37.4	(1)	40.8	.734	10.4	.815	65	126	167	10.3
965	do	Zapata	Mirando		.923	21.8	.25	70	(1)					113	341	(4)	4.7
25008	do		Wortham	Woodbine, 3,015 feet.	.825	40.0	.21	38.0	5	31.5	.755	27.5	.804	63	103	188	11.51
428	West Virginia	Kanawha	Cabin Creek		.797	46.0	.19	36.2	(1)	40.5	.730	21.0	.797	54.8	71.4	111.6	1.2
429	do	do	Kelly Creek		.799	45.6	.11	39	32	39.6	.731	18.4	.798	57.3	75.3	121.8	1.0
416	do	Ritchie, Wood, et al.			.805	44.3	.28	37.8	(1)	38.3		18.0	.804	62.5	101.2	112.5	2.1

[1] Below 5° F.

[2] More than 400 seconds Saybolt at 100° F.

[4] 78 seconds Saybolt at 212° F.

Properties of typical crude oils from fields of the United States—Continued

Sample No.	State	County	Field or district	Sand or depth	Properties of crude					Gasoline fraction		Kerosene fraction		Viscosity at 100° F. of vacuum fractions			Carbon residue, per cent
					Specific gravity	Degrees A. P. I.	Sulphur content	Viscosity at 100° F.	Pour test, ° F.	Per cent	Specific gravity	Per cent	Specific gravity	225 to 250° C.	250 to 275° C.	275 to 300° C.	
425	West Virginia	Tyler			0.804	44.5	0.095	37	(1)	35.8	0.744	20.8	0.795	57.0	76	107	1.3
578	Wyoming	Carbon	Lost Soldier		.875	30.2	.11	50	54	16.7	.804			59	85	138	6.5
577	do	do	Rock Creek		.843	36.4	.27	47.6	48	31.4	.744	4.4	.813	60	78	142	6.8
560	do	Converse	Big Muddy		.863	32.5	.17	66.0	(1)	22.2	.762	4.5	.818	59	92		6.0
566	do	Fremont	Lander		.913	23.5	2.62	215	7	11.0	.755	10.1	.816	61	96	154	15.1
573	do	Hot Springs	Grass Creek		.809	43.4	.14	34.5	(1)	42.6	.741	13.3	.804	56	79	123	4.6
23-292	do	do	do	Embar and Tensleep.	.906	24.7	27.2	158	(1)	16.7	.741	3.8	.809	64	109	230	14.9
23-286	do	Natrona	Poison Spider	Tensleep	.966	15.0	4.61	1,220	(1)	7.5	.765	2.9	.819	75	141	229	22.1
561	do	do	Salt Creek		.841	36.8	.18	50	57	29.3	.750	9.9	.817	59	83	130	6.1
24-365	do	do	do	3d Wall Creek	.839	37.2	.22	44	(1)	28.2	.757	4.7	.824	61	91	146	3.6
23025	do	do	Teapot Dome	2d Wall Creek, 2,990 feet.	.848	35.4	.20	46	50	28	.765	4.0	.825	57	73	107	6.2
23-277	do	Niobrara	Lance Creek		.808	43.6	.065	34	(1)	33.9	.757	9.5	.818	55	77	109	1.0

[1] Below 5° F.

SULPHUR AND PYRITES

By Helena M. Meyer [1]

SULPHUR

SUMMARY

An increase in the demand for crude sulphur in the United States in 1925 is shown by the apparent consumption of 1,229,000 long tons, an increase of 173,000 tons from 1,056,000 tons in 1924 and of 276,000 tons from the average for the five-year period 1920 to 1924, namely, 953,000 tons. The exportation of 629,401 long tons of crude sulphur in 1925 established a new high record in that phase of the industry as well.

In 1924 the production of crude sulphur was mainly by three large companies operating in Louisiana and Texas. Exhaustion in December, 1924, of the deposit of the Union Sulphur Co., in Calcasieu Parish, La., left the Texas mines as the only large producers, and they in 1925 produced more than 99.9 per cent of the country's output. The production increased from 1,220,561 long tons in 1924 to 1,409,262 tons in 1925, even without the usual large production from Louisiana, but was considerably smaller than the average for the five-year period, 1920 to 1924, 1,644,000 tons.

The Union Sulphur Co. continued to ship sulphur from large stocks at the mine in Louisiana, and the bulk of the record-breaking shipments of the country in 1925—1,858,003 long tons compared with 1,537,345 tons in 1924, and 1,394,000 tons, the average of the five-year period 1920 to 1924—was from Louisiana and Texas. The shipments in 1925 were 239,162 tons larger than those of 1923, the previous year of highest record. In Texas the Freeport Sulphur Co. resumed work during 1925 at Bryan Mound; the company's property at Hoskins Mound and that of the Texas-Gulf Sulphur Co., at Gulf, were in operation throughout the year. The Frasch process of mining sulphur by forcing superheated water into the sulphur-bearing rocks and bringing molten sulphur to the surface is described by W. T. Lundy [2] in the December, 1925, issue of Chemical and Metallurgical Engineering. The Union Sulphur Co., in Calcasieu Parish, La., was the first to employ this process successfully.

[1] Statistics on imports and exports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

[2] Lundy, W. T., "How sulphur is mined with superheated water": Chem. and Met. Eng., vol. 32, 1925, pp. 917-919.

The excess of shipments over production was drawn from the large stocks on hand at the mines; these stocks had dropped from a record of 3,000,000 tons at the end of 1923 to 2,700,000 tons at the end of 1924, and at the end of 1925 totaled 2,250,000 tons.

The value of the shipments of sulphur in 1925 is estimated at $29,000,000. Chemical and Metallurgical Engineering gave the price of crude sulphur at the mine in bulk as $14 a ton on January 1, 1925, and $17 a ton on December 31, 1925.

The exports of crude sulphur continued to grow and in 1925 were 629,401 long tons, compared with 482,114 tons in 1924, and with an average of 441,000 tons for the five-year period 1920 to 1924. The 1925 exports were the highest ever recorded and compare with 485,664 tons for 1922, which previously held the record.

The exports of Sicilian sulphur dropped from 298,669 long tons in 1924 to 251,173 tons in 1925, according to a report of Consul General Holland,[3] Catania. According to this report production during 1925 amounted to 204,712 long tons, compared with 237,346 tons in 1924, and stocks of sulphur were decreased from 172,926 long tons at the end of 1924 to 109,953 tons at the end of 1925. Official figures give the production of crude sulphur in Sicily in 1924 as 243,830 metric tons (239,978 long tons); figures for 1925 are 208,320 metric tons. One of the outstanding events in the Sicilian sulphur industry in 1925 was the agreement reached by the sulphur consortium and the Society of Sicilian Sulphur Refineries. This agreement is summarized by Consul Holland as follows:

> The consortium is to share equally with the refineries in the net profits derived from the sale of the refined product, but is exempt from contributing anything in the event of any loss from that end of the business. The consortium does not contribute any capital, and therefore is not concerned with the kinds of refined sulphur produced, but is indirectly connected with the selling end of these refined products and shares in the profits.
>
> The consortium has full power relative to the movement of crude sulphur, but is bound to sell only to the refineries belonging to the Society of Sicilian Sulphur Refineries, and the latter are bound to refine only sulphur furnished by the consortium. The crude sulphur is to be paid for according to the prices published by the consortium, and not, as previously, on a basis of the cost of production to the mine, which was always varied according to the location.
>
> The principal advantages to the consortium, therefore, are obviously an exemption from assessment in case of loss and an equal share in any net profits resulting from the refining end of the industry. The advantages gained on the part of the refiners are those emanating from closer cooperation with the extractive end of the industry and a more certain basis upon which to work in carrying on the refining.

Although miners' wages are low the cost of producing sulphur in Sicily is high, because the mining methods are crude. These inefficient methods, the limited capital of the mine owners, and the lack of Government aid caused Sicilian production to drop, as already mentioned.

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[3] Holland, Philip, "Sicilian sulphur industry in 1925": Commerce Repts., No. 23, June 7, 1926, pp 607-608.

Sulphur produced and shipped in the United States, 1904–1925

Year	Produced (long tons)	Shipped		Year	Produced (long tons)	Shipped	
		Long tons	Approximate value			Long tons	Approximate value
1904	85,000	60,000	$1,256,000	1915	520,582	293,803	$4,959,000
1905	220,000	162,000	3,305,000	1916	649,683	766,835	12,246,000
1906	295,123	185,082	3,207,000	1917	1,134,412	1,120,378	23,987,000
1907	188,878	271,859	4,771,000	1918	1,353,525	1,266,709	27,868,000
1908	364,444	206,473	3,727,000	1919	1,190,575	678,257	10,252,000
1909	273,983	258,203	4,782,000	1920	1,255,249	1,517,625	30,000,000
1910	247,060	250,919	4,522,000	1921	1,879,150	954,344	17,000,000
1911	205,066	253,795	4,573,000	1922	1,830,942	1,343,624	22,000,000
1912	787,735	305,390	5,289,000	1923	2,036,097	1,618,841	26,000,000
1913	491,080	319,333	5,617,000	1924	1,220,561	1,537,345	25,000,000
1914	417,690	341,985	6,214,000	1925	1,409,262	1,858,003	29,000,000

IMPORTS AND EXPORTS

Imports of sulphur have been negligible since 1917. In 1916 the following classes of sulphur were imported for consumption: Crude, 21,289 long tons; flowers of sulphur, 425 tons; refined, 455 tons; and all other, 66 tons. Since September 22, 1922, sulphur imports have been reported under the classification "Sulphur and sulphur ore," and amounted to 100 long tons in 1925. The exports of sulphur or brimstone in 1925 were the largest ever recorded, being 629,401 long tons, valued at $11,000,235, compared with 485,664 tons, valued at $7,095,628, in 1922, which previously had the highest record. The exports of refined, sublimed, and flowers of sulphur in 1925 amounted to 2,849 long tons, valued at $153,546, compared with 2,029 tons, valued at $101,347, in 1924, making a total of exports of crude and refined sulphur of 632,250 tons in 1925, compared with 484,143 tons in 1924.

Crude sulphur imported into and exported from the United States, 1904–1925

Year	Imports for consumption		Exports	
	Long tons	Value	Long tons	Value
1904	127,996	$2,462,360	[1] 3,000	(1)
1905	82,961	1,528,136	11,522	(2)
1906	72,404	1,282,873	14,437	$289,474
1907	20,399	355,944	35,925	734,749
1908	19,620	318,577	27,894	561,534
1909	28,800	492,962	37,142	736,928
1910	28,656	496,073	30,742	552,941
1911	24,200	434,796	28,103	545,420
1912	26,885	494,778	57,736	1,076,414
1913	15,122	286,209	89,221	1,599,761
1914	23,610	398,984	98,163	1,807,324
1915	24,647	405,990	37,312	724,679
1916	21,289	358,416	128,755	2,505,857
1917	973	20,176	152,736	3,500,819
1918	55	1,692	131,092	3,626,638
1919	77	1,997	224,712	6,325,552
1920	44	1,722	477,450	8,994,350
1921	4	226	285,762	4,524,768
1922	[3] 167	6,453	485,664	7,095,628
1923	[4] 465	21,535	472,525	7,105,260
1924	[4] 1,005	40,293	482,114	7,792,854
1925	[4] 100	4,411	629,401	11,000,235

[1] Exports of sulphur not separately classified in the Bureau of Foreign and Domestic Commerce prior to 1905. In Mineral Resources, 1904, p. 1079, J. H. Pratt says that in 1904 the first cargo of American sulphur, 3,000 tons, was exported from Louisiana to Marseille, France. No value is given.

[2] Value not recorded.

[3] Composed of 130 tons of "crude sulphur," imported Jan. 1 to Sept. 21, and 37 tons of "sulphur and sulphur ore" imported Sept. 22 to Dec. 31.

[4] Classified as "sulphur and sulphur ore."

Although the customs districts from which crude sulphur was cleared in 1925 are distributed around the entire border of the country, practically all the sulphur exported was from the large mines in Texas and Louisiana.

Sulphur exported from the United States, 1924–25, by destinations

Destination	Sulphur or brimstone		Refined, sublimed, and flowers of	
	Long tons	Value	Pounds	Value
1924				
North America:				
Canada	119,221	$1,921,585	1,769,984	$34,807
Central America	81	3,865	192,739	5,617
Mexico	7,140	116,998	1,428,529	30,436
Newfoundland and Labrador			2,435	136
West Indies and Bermuda	2,536	36,875	112,026	3,575
	128,978	2,079,323	3,505,713	74,571
South America:				
Argentina	7,360	117,011		
Brazil	2,131	33,039	144	11
Colombia	30	1,444	117,075	4,040
Other	924	24,681	232,994	4,713
	10,445	176,175	350,213	8,764
Europe:				
Belgium	3,502	58,413		
Finland	6,300	95,300		
France	92,918	1,527,833	4,108	112
Germany	79,906	1,358,474		
Netherlands	21,305	358,059	1,510	144
Norway	1,304	19,560		
Spain	9,689	155,353		
United Kingdom (England)	36,458	591,424	14,348	1,331
Other	7,627	110,432		
	259,009	4,274,848	19,966	1,587
Asia	40	1,500	130,921	2,782
Africa:				
Algeria and Tunisia	7,550	121,700		
British South	5,000	85,000	604	50
	12,550	206,700	604	50
Oceania:				
Australia	58,827	882,598	443,842	11,225
New Zealand	12,265	171,710	94,750	2,368
	71,092	1,054,308	538,592	13,593
	482,114	7,792,854	4,546,009	101,347
1925				
North America:				
Canada	125,681	2,019,205	2,795,209	70,058
Central America	21	978	257,947	7,116
Mexico	13,844	227,880	1,293,410	25,108
Newfoundland and Labrador	3,384	50,294	1,174	105
West Indies and Bermuda	2,541	36,991	89,948	3,222
	145,471	2,335,348	4,437,688	105,609
South America:				
Argentina	8,200	131,500	39,600	2,340
Brazil	3,222	48,966	34,894	739
Colombia	4,067	65,757	63,253	2,830
Other	1,112	34,092	528,062	8,732
	16,601	280,315	665,809	14,641

Sulphur exported from the United States, 1924–25, by destinations—Continued

Destination	Sulphur or brimstone		Refined, sublimed, and flowers of	
	Long tons	Value	Pounds	Value
1925—Continued				
Europe:				
Belgium	11,608	$220,975		
France	110,684	1,996,157		
Germany	136,972	2,638,285		
Netherlands	40,909	781,217		
Spain	8,345	145,592		
United Kingdom	30,398	557,322	226,913	$4,177
Other	2,114	36,452	640	96
	341,030	6,376,000	227,553	4,273
Asia	2,752	44,105	151,442	2,801
Africa:				
Algeria and Tunisia	7,700	138,700		
British—				
East	7,700	138,600		
South	15,100	237,500	50,344	1,096
Portuguese East	1,500	25,500		
	32,000	540,300	50,344	1,096
Oceania:				
Australia	71,530	1,124,258	621,533	19,585
New Zealand	20,017	299,909	227,310	5,522
Other			112	19
	91,547	1,424,167	848,955	25,126
	629,401	11,000,235	6,381,791	153,546

In 1925, as usual, European countries received the larger part of the crude sulphur exported from the United States; they received 54 per cent, the same as in 1924. In 1925 Germany received the largest amount shipped to any one country, displacing Canada which had been first. Germany received 22 per cent of the total, compared with 20 per cent received by Canada. In 1924 Canada received 25 per cent, Germany was third with 17 per cent, and France was second with 19 per cent. In 1925 France received 18 per cent, Australia 11 per cent, Netherlands 6 per cent, and the United Kingdom 5 per cent. The United Kingdom was one of the very few countries to show a decrease in imports of sulphur from the United States in 1925.

Canada and Mexico took 64 per cent of the refined, sublimed, and flowers of sulphur exported, receiving 4,088,619 pounds of a total of 6,381,791 pounds exported. Australia received the third largest amount, 621,533 pounds.

The exports of sulphur from Sicily, by countries of destination, are given as follows in a report dated March 25, 1926, by Consul Edward I. Nathan, Palermo, Italy:

Sulphur exported from Sicily in 1925, by destinations, in metric tons

Africa:		Chile	1,461
Algieria, Egypt, Tunisia	3,364	Czechoslovakia	518
British South	1,119	Finland	1,029
Argentina	3,621	France	14,144
Australia	454	Germany	8,773
Austria	8,187	Greece	16,441
Belgium	1,568	India, British	6,017
Brazil	3,025	Indies, Dutch East	10,056

Italy	70, 954	Turkey	4, 370
Netherlands	1, 205	Ukraine	2, 296
Norway	1, 201	United Kingdom	64, 335
Portugal	14, 117	Yugoslavia	1, 382
Rumania	903	Other countries	3, 950
Russia	2, 060		
Spain	2, 924		255, 205
Sweden	5, 731		

PYRITES

The production of domestic pyrites increased from 160,096 long tons, valued at $645,262, in 1924 to 170,081 tons, valued at $650,448, in 1925. Imports in 1925 were 276,385 long tons, valued at $773,925, compared with 246,737 tons, valued at $598,544, in 1924, and were higher than the average for the five-year period, 1920 to 1924, 268,000 tons.

The combined output of California and Virginia in 1925, 163,773 long tons, representing 96 per cent of the country's production, more than accounted for this increase in the production. In addition to California and Virginia, New York produced 6,168 tons, Ohio 100 tons, and Wisconsin 40 tons. The average production for the five-year period, 1920 to 1924, was 196,000 tons. The 1920 production of 310,777 tons is largely responsible for this large figure, as in no year since then has the average for the period been reached.

The quantity of pyrites sold or consumed by producing companies in 1925 amounted to 170,298 long tons, 217 tons higher than production, and an increase from 160,075 tons in 1924.

The 1925 production of pyrites (lump and fines) contained 69,807 tons of sulphur, an average content of 41 per cent, compared with 41.5 per cent in 1924 and 41.3 per cent in 1923.

According to the Engineering and Mining Journal-Press, quotations for pyrites on January 3, 1925, were: Tharsis, per long ton unit c. i. f. United States ports, furnace size, 12 cents; lump, 11 cents; and fines through ½ inch, 11½ cents. There were no changes in quotations until May, when furnace size was given as 13 cents and run of mine 12 cents. This quotation prevailed until December 5, when 13½ cents was stated for furnace ore.

The production of pyrites from 1904 to 1925 is given in the following table:

Pyrites produced in the United States, 1904–1925

Year	Long tons	Value	Year	Long tons	Value
1904	207, 081	$814, 808	1915	394, 124	$1, 674, 933
1905	253, 000	938, 492	1916	439, 132	2, 038, 002
1906	261, 422	931, 305	1917	482, 662	2, 593, 035
1907	247, 387	794, 949	1918	464, 494	2, 644, 515
1908	222, 598	857, 113	1919	420, 647	2, 558, 172
1909	247, 070	1, 028, 157	1920	310, 777	1, 596, 961
1910	241, 612	977, 978	1921	157, 118	711, 432
1911	301, 458	1, 164, 871	1922	169, 043	671, 241
1912	350. 928	1, 334, 259	1923	181, 628	661, 000
1913	341, 338	1, 286, 084	1924	160, 096	645, 262
1914	336, 662	1, 283, 346	1925	170, 081	650, 448

In addition to the pyrites reported in this table for 1925, 10,309 tons of partly desulphurized tailings from the roasting and separating operations of the National Zinc Separating Co.'s plant at Cuba City,

Wis., were re-treated by autoroasting, and the fumes were used for the production of sulphuric acid.

The imports of pyrites from 1904 to 1925 are given in the following table. In 1925, 275,174 long tons came from Spain and 1,211 tons from Canada. In 1924, 242,786 tons came from Spain, 3,935 from Canada, 15 from Germany, and 1 from the United Kingdom.

Sulphur ore as pyrites, containing more than 25 per cent of sulphur, imported for consumption in the United States, 1904–1925

Year	Long tons	Value	Year	Long tons	Value
1904	422,720	$1,533,997	1915	964,634	$4,817,977
1905	511,946	1,774,379	1916	1,244,662	6,728,318
1906	598,078	2,148,558	1917	967,340	5,981,457
1907	627,985	2,581,787	1918	496,792	2,741,676
1908	668,117	2,624,339	1919	388,973	2,176,565
1909	688,843	2,428,580	1920	332,606	1,660,832
1910	803,551	2,748,647	1921	216,229	818,852
1911	1,006,310	3,788,803	1922	279,445	1,199,076
1912	970,785	3,841,683	1923	263,695	1,254,389
1913	850,592	3,611,137	1924	246,737	598,544
1914	1,026,617	4,797,326	1925	276,385	773,925

COAL

By F. G. Tryon and L. Mann [1]

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[1] The work incident to the preparation of coal statistics was done by the following employees of the Bureau of Mines: Compilation of the annual statistics of bituminous coal was conducted by Miss L. Mann, with the assistance of Miss J. M. Corse; the statistics of anthracite were compiled by Mrs. H. L. Bennit; the monthly and weekly estimates of production were prepared by Miss R. M. McKinney; the figures of consumers' stocks were compiled by Mrs. E. E. Finn; and the tables of exports and imports were compiled from the records of the Bureau of Foreign and Domestic Commerce by J. A. Dorsey. James E. Black, H. O. Rogers, and Raymond Kenny have assisted in the analysis of the returns.

REVIEW OF THE COAL INDUSTRY IN 1925

BITUMINOUS COAL

Continuance of 1924 depression.—The depression in the bituminous coal industry which had been so acute in 1924 continued far into 1925, but was relieved after September 1 by the extra demand that accompanied the great strike of the anthracite miners. Save for this diversion, 1925, in the bituminous coal trade, was a year of declining prices, of narrow profits or absolute losses, of abandoned mines, and of unemployment.

The condition of the bituminous coal-mining industry was the more striking because, for most other business, 1925 was a year of abounding prosperity. Agriculture indeed was depressed, but agriculture has little influence on the demand for coal. Judged by other barometers of production and finance, 1925 set a new record for total volume of business done. In such a year why did not bituminous coal share in the general prosperity?

Influence of war-time expansion.—The answer to the above question is found in causes that were set in motion by the high prices of the war and the period immediately after—causes that began to be felt years later and whose full effect has not been sensed even yet. Chief among these was the growth of mine capacity. Even before the war there had always been a capacity to produce more than the market would absorb, as shown by the fact that the mines worked an average of only 215 days a year; but with the opening of thousands of new mines and the expansion of existing mines the over-development became more pronounced. From 1915 to 1923, 275,000,000 tons were added to capacity,[2] an amount so far in excess of the need that in 1923 the mines reported an average working time of only 179 days, although the year was one of active business with heavy purchases for storage.

Influence of fuel economy.—The fact of the increased capacity was familiar to every coal man who had watched the new mines opening in his own district. Less familiar, but no less important, was a gradual change in the demand. The high prices of 1917, 1918, 1920, and 1922 had turned the attention of consumers to economy in the use of fuel to a degree unknown before. The electric utilities cut their unit consumption of coal per kilowatt hour from 3.2 pounds in 1919 to 2.1 in 1925, a reduction of 34 per cent in 6 years. Manufacturers shut down their own small steam plants and bought electric power from the more efficient central stations. The railroads, the coke ovens, the iron and steel furnaces, and even the manufacturers who continued to make their own power, all bent their energies to getting more work out of the same ton of coal, and wherever records of fuel performance are kept the same story of diminishing consumption of fuel per unit of product is found.

Competition of other sources of power.—Reinforcing the trend to fuel economy now came another factor—the competition of other sources of power. The consumption of all coal—anthracite and bituminous combined—increased only 3.3 per cent from 1913 to 1925,

[2] This figure assumes a potential working time of 280 days—a conservative allowance—and if the entire potential working year of 308 days be assumed, the increase would be even more startling (Table 7). At either 308 or 280 days it is clear that the increase was unprecedented.

but the consumption of natural gas increased 104 per cent, of petroleum 211 per cent, and of water power 119 per cent. The rise of hydroelectric power was especially marked after the passage of the Federal water power act in 1920, which opened the navigable streams to development under a system of licensing, and the increase in the annual production of water power in 1925 over 1920 was equivalent to 13,000,000 tons of coal. The rise of oil competition was accelerated by the nearly simultaneous discovery about 1923 of five very large new pools, which threw a great surplus of oil upon the boiler-fuel market. Statistics compiled by the American Petroleum Institute show that the increase in annual consumption of fuel oil and of crude oil used as fuel between 1920 and 1925 was equivalent to 30,000,000 tons of coal. If allowance is made for the unseen competition of the refined products of petroleum, which are meeting demands for energy that would otherwise tend to fall upon coal, the displacement of coal appears far greater. The increase in the total quantity of petroleum consumed from 1920 to 1925 was equivalent to 70,000,000 tons of coal a year.

Growth of demand arrested.—The net result of the economies effected and the competition of petroleum and water power was to stop the normal growth of the demand for coal. Before the war the consumption of all coal, anthracite and bituminous, in the United States was increasing at the rate of 18,000,000 tons a year. Had this rate of increase continued, the consumption of 1925 would have been 760,000,000 tons; actually it was only 563,000,000 tons.[3] (Table 4.) Thus, the demand of 1925 fell something like 200,000,000 tons short of what all pre-war experience would have led the industry to expect. The former steady growth, to which the industry had become accustomed for over a century, had been checked and for the moment apparently stopped dead. This one factor goes far to explain the present depression of the bituminous coal industry.

Readjustment inevitable.—Had it not been for the arrested demand the inflation of mine capacity would have been less serious. There had been overdevelopment before, but the normal growth of demand always tended to absorb the excess. If the demand had continued to grow at the old rate, it might eventually have furnished business for the new mines and employment for the thousands of newly recruited miners. The expected increase, however, failed to materialize, and the factor of stationary demand was added to the factor of overexpanded capacity; readjustment then became inevitable. The bituminous industry could not continue indefinitely with an average working time of 179 days a year.

Postponement by strikes and car shortage.—For half a decade readjustment was postponed by a series of events that counteracted the effect of changed conditions of supply and demand. In 1919 a general strike shut off six weeks' production of the union bituminous mines. In 1920 there was an abnormal demand for export, the anthracite miners took a 20-day "vacation," and the railway switchmen's strike caused an acute shortage of cars at the mines. In 1921 the British miners struck for more than three months, and again an abnormal demand for export helped to fill the void at home. In

[3] The figures given refer to consumption after deducting exports and allowing for changes in stocks. They include anthracite as well as bituminous coal because of the misleading effect which would otherwise be introduced by the anthracite strike of 1925. Some millions of tons of bituminous coal, either direct or in the form of coke, were used to replace the deficit in anthracite.

1922 both the union bituminous and the anthracite mines were closed for nearly five months in the greatest suspension in our history—a suspension in which many nonunion bituminous miners also joined. Moreover, in 1922 the railway shopmen's strike disorganized transportation for many months. In 1923 the French went into the Ruhr, again stimulating the export trade, and American consumers bought 26,000,000 tons of coal for storage, to build up the reserves they had exhausted in the strike of the preceding year and to prepare for the possibility of another strike. Thus, from 1919 to 1923, with comparatively brief interludes, some external force such as a strike or a car shortage was always intervening, covering up the silent changes which were going on in the relation of supply and demand and postponing their inevitable adjustment.

Peace and adequate transportation assured.—In 1924 this series of events ended. The signing of a long-time wage agreement at Jacksonville, Fla., to run from April 1, 1924, to March 31, 1927, removed the possibility of interruption by strike. At the same time transportation improved remarkably. By the purchase of additional cars and locomotives, by improvement of yards and terminals, and, what is more important, by greater efficiency in operation the railroads dispelled the old bogey, car shortage. In the past complaints over the car supply were heard whenever production reached 10,000,000 tons a week; now the railroads were prepared to handle 12,000,000 and 13,000,000 tons without difficulty. So marked was the improvement that when the test came during the anthracite strike of 1925 and soft coal was in heavy demand to replace anthracite the carriers handled a bituminous production of over 12,000,000 tons for nine successive weeks with practically no complaint of car shortage. Their achievement was the more remarkable because much of this coal was moved abnormally long distances into the anthracite-consuming territory.

Market changes become apparent in 1924.—With strikes and car shortage eliminated, the pressure of surplus capacity and changing demand now slumped down upon the industry with crushing weight. In 1924 the depression was aggravated by the necessity of liquidating the enormous stocks which consumers had accumulated in anticipation of a possible strike and which the Jacksonville agreement rendered unnecessary. By 1925 the liquidation had been largely completed, but the market was still very dull. Spot prices declined from January to July. The average value per ton dropped from $2.20 in 1924 to $2.04 in 1925 and mines continued to close.

Severity of the depression.—All these conditions reflected the difficult times through which the industry was passing. It had experienced hard times before, but never, so far as reflected in the statistical record, as hard as those of 1924 and 1925. The depression was most acute in the Northern States but was felt in the South also. For the first time in the 35 years covered by the statistical record there was an absolute reduction in mine capacity. In former depressions the growth of capacity had been checked. This time it dropped from 885,000,000 tons in 1923 to 748,000,000 in 1925.[4] The change not only involved shutting down thousands of wagon mines but 2,187 commercial mines. In consequence average sales prices were cut by 24 per cent and 116,000 men laid off.

[4] Assuming 280 days' operation. (See Table 7.)

Shifts in business from North to South.—The burden of the depression was heaviest in the union States, which operated under a fixed wage scale, whereas the southern fields were free to readjust wages and thereby obtain the business. For many months after the strike of 1922 wage rates in the nonunion fields were on a parity with the union rates. Reports of wage cuts, however, began late in 1923, and after the Jacksonville agreement was signed most of the nonunion operators reduced the rates first to the 1919 and later to the 1917 level, or even lower. Against a standard day wage of $7.50 in the union fields, the nonunion fields were paying nearer $5,[5] and there were corresponding differences in the tonnage rates. The result in terms of costs of production is seen in the fact that nonunion western Kentucky sold coal at an average sales realization of $1.44 f. o. b. mine, whereas in Indiana, its union competitor, the average sales realization was $2.02 (see Table 83), this difference of 58 cents per ton being a rough measure of the competitive advantage of the lower wage scale in the nonunion field. A like difference, sometimes more and sometimes less, is found between the average prices of other union and nonunion States.

Responding to these differences in cost of production, business was diverted from the northern to the southern fields. Between 1923 and 1925 the production of Illinois decreased 16 per cent, that of Indiana decreased 19 per cent, and that of Ohio 31 per cent. The prodction of West Virginia, on the contrary, increased 13 per cent, and that of Kentucky increased 23 per cent. As late as 1921 Kentucky ranked below Ohio; in 1925 it produced nearly twice as much as Ohio. In 1923 Pennsylvania led West Virginia by 64,000,000 tons; in 1925 Pennsylvania was still ahead, but by less than 15,000,000 tons.

Depression in the South.—These shifts of business from North to South are familiar to every coal man and have been the subject of much comment. What is not so familiar is that in the South as well as in the North a difficult readjustment was going on. Intense competition was forcing the closing of high-cost mines and the liquidation of surplus capacity. The differences between North and South were differences of degree. West Virginia shut down 493 commercial mines between 1923 and 1925 and discharged a total of 7,111 men. In Kentucky 194 commercial mines had to close and 3,787 men lost their jobs. In both Kentucky and West Viriginia, in spite of the increase in production, the aggregate capacity in operation decreased. In all but one of the 24 principal producing States the number of men employed in 1925 was less than in 1923. In Alabama the reduction in men employed was 9.8 per cent; in Tennessee, 26 per cent; in Maryland, 3.9 per cent; in Virginia, 3.1 per cent; in West Virginia, 6 per cent; and in Kentucky, 6.2 per cent. In the entire area east of the Mississippi and south of the Ohio and Potomac there were 17,000 less miners at work in 1925 than in 1923. (See Table 30.) The great increase in southern production was accomplished by working more days, not by hiring more men.

Steadier working time.—The mines that managed to keep open tended to run more steadily. The average time worked by the mines in operation in 1925 was 195 days, an increase of 16 days over 1923,

[5] There is the widest variation in rates in the nonunion fields, and no accurate and comprehensive information exists as to the rates actually paid. It is known, however, that many nonunion mines were paying approximately $4 or $5 for inside day labor.

in spite of the fact that the production of 1925 was smaller. In West Virginia the average time worked increased 56 days; in union Indiana, 23 days; and in Illinois, 3 days. Similarly, the annual output per worker at the mines which remained in operation increased. In Illinois it increased from 795 tons per man to 860 tons, or 8 per cent, from 1923 to 1925. In Kentucky it increased 31 per cent, and for the country as a whole 10 per cent. This evidence of steadier work for the men at the mines that continued in operation only emphasizes the plight of those at the other mines that could not operate at all.

Concentration of work in the larger mines.—With the closing of less efficient mines, which tended to continue in the nonunion as well as in the union States, a larger proportion of the output than ever before came from the big mines in 1925. In the United States, as a whole, 53.7 per cent of the production of 1925 was contributed by class 1 mines, against 47.2 per cent in 1923. (Class 1 mines are those producing 200,000 tons or more (Table 60).) In West Virginia the tonnage of the class 1 mines increased from 34.6 per cent in 1923 to 52.0 per cent in 1925; in Illinois it increased from 74.9 to 82.4 per cent. Thus in both union and nonunion districts the changed conditions were tending to eliminate smaller mines and concentrate available business among the larger mines. This tendency was further accentuated by financial consolidations of operating companies, a considerable number of which occurred in 1924 and 1925.

Effect of the anthracite strike.—On September 1 the depression of the bituminous market was temporarily relieved by the general strike in the anthracite region. The shortage of domestic fuel in New England and the Middle Atlantic States created a demand for some millions of tons of substitutes. In the bituminous coal trade the chief beneficiaries were the "smokeless" coal fields in southern West Virginia and central Pennsylvania and those producers of high-volatile lump coal who were near enough to the anthracite region to participate in the demand. Thus the spot price of West Virginia smokeless run of mine per net ton f. o. b. mines, as quoted by Coal Age in the Boston market, jumped from $1.58 in July to $2.49 in September. A slight recession in October was followed by advances in November, and the December average was $2.29. Outside these few districts of the East, however, the anthracite strike was scarcely felt, and for the country as a whole Coal Age's average spot price for the last quarter of the year was only 12 cents a ton higher than in the same period of 1924. (Table 68.)

THE ANTHRACITE INDUSTRY IN 1925

The anthracite trade in 1925 was dominated by the suspension which began on September 1 and continued until February of the following year.

Months preceding the expiration of the wage agreement the possibility of a stoppage cast its shadow before. The existing agreement of September, 1923, had been negotiated with difficulty, and when early in July the miners presented demands for an increase in wages and the check-off producers and consumers alike began to prepare for a labor contest. Throughout July and August production was exceptionally heavy, and large stocks were accumulated by both operators and retailers.

As no agreement was reached by September 1, all men but the maintenance crews laid down their tools, and in the last four months of the year the only anthracite produced was a small tonnage of the steam sizes obtained chiefly by the river dredges.

The total quantity produced during the year was 55,194,000 gross tons as against 78,506,000 in 1924. The deficit below the normal supply was thus 23,000,000 tons, or roughly 30 per cent, yet the country adjusted itself to the shortage with surprisingly little distress. The familiar symptoms of a shortage—rising prices, complaints of quality, even demands for regulatory legislation—were present, but in much less degree than in 1920, 1922, and 1923. This result was largely due to more effective use of substitutes and to the admirable performance of the railroads in moving distant supplies of bituminous coal into the affected areas.

Repeated strikes and a more or less chronic undersupply of the domestic sizes from 1917 to 1923 had begun to have their effect. Consumers who had been forced to burn substitutes in the winter of 1922–23 now put their knowledge to good use. In the New England States the use of substitutes took the form of an organized campaign. The governors of the six States appointed a fuel committee, which assisted retailers to make connections with producers of semibituminous coal and distributed instructions to householders on what substitutes to use and how to burn them. Consumers were urged not to bid up the price by unwise buying and warned that the best way to guard their interests was to demonstrate their ability to get along with other fuels. Encouraged by the committee, the producers of West Virginia smokeless coal opened demonstration centers in New England. Somewhat similar measures were adopted in other communities.

The quantity of bituminous coal thus substituted for anthracite will never be known, but it must have run into several million tons. The by-product coke ovens were soon taxed to capacity, and their product was supplemented by sporadic shipments of beehive coke from the Connellsville region and even from Alabama. Sales of domestic by-product coke in 1925 were 4,085,000 tons and of domestic beehive coke 393,000 tons, an increase over 1924 of 1,272,000 and 253,000 tons, respectively. Welsh anthracite, which had proved an acceptable substitute in the winter of 1922–23, reappeared in 1925. Imports of anthracite from the United Kingdom amounted to 318,000 net tons up to December 31 and imports from Germany to 37,000 tons. (Table 73.) Although these imports furnished a measure of relief in the coast cities, it must be remembered that the total was equivalent to less than two days production of our own anthracite mines.

No less important than the attitude of consumers was the admirable service of the railroads in facilitating the movement of bituminous coal to the points of shortage. The Interstate Commerce Commission issued orders establishing all-rail rates on prepared sizes from the southern fields to the Middle Atlantic States and New England. The heavy production of bituminous coal, averaging much more than 12,000,000 tons in the last nine weeks of the year, was handled without serious complaint of car shortage.

The demand for intervention by the Federal Government, which had been a notable feature of former strikes, was less noticeable in

1925. The people of New England seemed determined to resist the strike by using substitutes. The suggestions for mediation came rather from the State of Pennsylvania itself, the region directly affected by the strike. Discussion of settlement of the strike, however, belongs to the report for 1926. The year 1925 closed with the situation deadlocked and the mines still shut down.

STATISTICAL SUMMARY

The salient statistical facts of the coal industry in 1925 are summarized in Tables 1 to 6.

TABLE 1.—*Salient statistics of the coal industry in 1925*

[Figures for bituminous in net tons; anthracite in gross tons]

	Bituminous	Anthracite
Production.....tons	520,052,741	55,193,883
Value at mines	$1,060,402,000	$327,665,000
Average value per ton	$2.04	$5.94
Average spot price as quoted by Coal Age	$2.06	(1)
Number of active mines of commercial size	7,144	[2] 326
Stocks of commercial consumers:		
Jan. 1.....tons	45,000,000	(1)
Dec. 31.....do	49,000,000	(1)
Net change during year.....do	4,000,000	[3] 4,500,000
Exports.....do	17,462,000	2,838,000
Imports.....do	602,000	342,000
Consumption (calculated).....do	499,193,000	57,198,000
Capacity of mines with present labor force (assuming 304 working days in the anthracite field and 308 working days in the bituminous field).....tons	822,000,000	92,000,000
Average number of days worked	195	182
Average days idle:		
All causes	113	122
Through strikes and lockouts	2	95
Other causes	111	27
Average number employed:		
Miners, loaders, and shot firers	367,456	78,773
Haulage and trackmen	68,526	17,000
Other underground	70,559	24,795
Surface	81,952	39,744
Output per man per day.....tons	4.52	[4] 2.12
Number of cutting machines	17,551	159
Quantity cut by machines.....tons	366,725,758	840,347
Per cent of output cut by machines	70.6	1.5
Number of power shovels in strip pits	389	97
Quantity produced by stripping.....tons	16,870,907	1,409,355
Number of loading machines	340	(1)
Quantity loaded by machines.....tons	6,243,104	(1)

[1] Data not available.
[2] Number of breakers, washeries, and dredge operations
[3] Producers' stocks
[4] Net tons.

TABLE 2.—*Summary of coal produced, value, men employed, days worked, and output per man per day, by States, in 1924*

[Note that figures relate only to active mines of commercial size; no canvass of wagon mines was made]

State	Net tons					Value		Number of employees				Average number of days worked	Average tons per man per day
								Underground		Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	All others				
Alabama	18,395,094	348,580	215,450	171,060	19,130,184	$44,756,000	$2.34	15,892	7,216	4,848	27,956	220	3.11
Alaska	93,932	4,321	1,410		99,663	560,000	5.62	60	40	67	167	287	2.08
Arkansas	1,402,929	15,019	33,555		1,451,503	5,898,000	4.06	1,811	732	807	3,350	134	3.24
California, Idaho, Nebraska, Oregon	8,352	7,851	750		16,953	71,000	4.19	36	20	27	83	156	1.31
Colorado	9,512,534	561,539	236,696	133,329	10,444,098	31,863,000	3.05	8,023	2,978	1,953	12,954	178	[1] 4.52
Georgia	58,097	611	1,839	14,400	74,947	271,000	3.62	55	19	69	143	248	2.11
Illinois	63,689,920	3,319,700	1,313,661		68,323,281	155,260,000	2.27	59,451	21,306	8,606	89,363	148	5.16
Indiana	20,338,416	725,561	416,236		21,480,213	46,453,000	2.16	17,717	6,210	3,631	27,558	136	5.75
Iowa	4,351,252	993,393	123,805		5,468,450	18,097,000	3.31	8,382	2,677	1,042	12,101	161	2.80
Kansas	3,871,125	309,806	66,802		4,247,733	12,854,000	3.03	6,182	1,250	1,129	8,561	151	3.29
Kentucky	43,683,182	859,023	458,205	146,794	45,147,204	84,733,000	1.88	31,864	14,703	9,199	55,766	174	4.67
Maryland	1,945,259	171,925	16,519		2,133,703	4,629,000	2.17	2,373	856	547	3,776	173	3.27
Michigan	767,359	6,433	57,228		831,020	3,602,000	4.33	1,016	390	145	1,551	178	3.00
Missouri	2,169,155	244,302	67,423		2,480,880	8,154,000	3.29	3,649	1,068	1,260	5,977	135	3.08
Montana	2,650,836	170,590	83,939		2,905,365	8,596,000	2.96	1,852	823	521	3,196	173	5.26
New Mexico	2,549,438	49,001	51,412	136,212	2,786,063	9,774,000	3.51	2,416	851	939	4,206	204	3.25
North Carolina	51,094	1,200	4,800		57,094	224,000	3.92	60	33	27	120	287	1.66
North Dakota	957,987	212,994	29,546		1,200,527	2,473,000	2.06	671	186	441	1,298	165	5.62
Ohio	27,404,951	2,685,565	382,491		30,473,007	62,011,000	2.03	29,481	8,966	5,782	44,229	143	4.82
Oklahoma	2,236,937	35,999	56,679		2,329,615	8,590,000	3.69	3,324	1,740	1,080	6,144	124	3.05
Pennsylvania, bituminous	110,240,821	6,565,736	1,835,366	11,991,850	130,633,773	295,164,090	2.26	108,773	38,312	22,237	169,322	180	4.27
South Dakota	3,000	9,043			12,043	36,000	2.99	40			40	138	2.18
Tennessee	4,142,873	73,700	109,781	230,201	4,556,555	9,711,000	2.13	5,726	2,236	1,403	9,365	159	3.05
Texas	1,119,048	7,256	20,707		1,147,011	1,721,000	1.50	1,426	456	313	2,195	166	3.16
Utah	4,107,261	51,400	60,566	268,930	4,488,157	12,057,000	2.69	2,369	1,023	938	4,330	182	[1] 5.70
Virginia	9,756,162	168,530	51,951	716,821	10,693,464	21,823,000	2.04	6,131	4,255	2,293	12,679	226	3.73
Washington	2,442,059	92,366	69,903	49,339	2,653,667	9,689,000	3.65	2,192	982	684	3,858	202	3.41
West Virginia	97,169,314	3,307,505	652,855	533,223	101,662,897	185,229,000	1.82	55,067	30,480	16,656	102,203	182	5.48
Wyoming	6,447,307	112,055	198,106		6,757,468	18,327,000	2.71	4,285	1,772	1,056	7,113	176	5.41
Total bituminous	441,565,694	21,111,004	6,617,681	14,392,159	483,686,538	1,062,626,090	2.20	380,324	151,580	87,700	619,604	171	4.56
Pennsylvania anthracite	77,247,499	3,043,939	7,635,424		87,926,862	477,231,000	5.43	76,035	43,328	40,646	160,009	274	2.00
Grand total	518,813,193	24,154,943	14,253,105	14,392,159	571,613,400	1,539,857,000	2.69	456,359	194,908	128,346	779,613	192	3.81

[1] Probably too high because of practice common in some districts of men going into mines to shoot coal and load mine cars on days when tipples or mines, as a whole, are not in operation.

TABLE 3.—*Summary of coal produced, value, men employed, days worked, and output per man per day, by States, in 1925*

[Note that figures relate only to active mines of commercial size; no canvass of wagon mines was made]

State	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Alabama	19,056,904	550,491	298,833	98,167	20,004,395	$42,442,000	$2.12	15,596	3,251	3,792	4,458	27,097	246	3.00
Alaska	77,830	3,975	1,063		82,868	405,000	4.89	55	10	26	66	157	243	2.17
Arkansas	1,176,888	20,460	22,691		1,220,039	4,829,000	3.96	2,088	373	388	789	3,638	112	2.99
California, Idaho, and Oregon	4,900	7,725			12,625	60,000	4.75	21	3	5	13	42	174	1.73
Colorado	9,454,769	528,098	218,303	109,381	10,310,551	30,322,000	2.94	8,472	1,453	1,269	2,009	13,203	192	[1] 4.07
Georgia	55,532	579	1,412	8,651	66,174	220,000	3.32	37	11	19	70	137	220	2.20
Illinois	62,712,422	3,170,520	1,026,417		66,909,359	146,492,000	2.19	53,242	8,534	8,568	7,479	77,823	161	5.33
Indiana	20,253,156	558,317	413,493		21,224,966	42,884,000	2.02	14,412	2,928	2,031	3,361	22,732	159	5.89
Iowa	3,711,654	905,840	97,349		4,714,843	14,807,000	3.14	7,302	933	1,102	830	10,167	153	3.02
Kansas	4,181,723	282,242	60,286		4,524,251	13,013,000	2.88	5,462	558	592	1,188	7,800	169	3.44
Kentucky	53,721,081	793,337	428,063	126,189	55,068,670	94,825,000	1.72	33,216	7,361	7,462	8,985	57,024	206	4.68
Maryland	2,565,868	111,287	17,417		2,694,572	5,312,000	1.97	2,406	455	266	453	3,580	209	3.61
Michigan	741,449	15,310	51,474		808,233	3,391,000	4.20	1,028	280	132	139	1,579	186	2.75
Missouri	2,384,642	261,099	48,474		2,694,215	8,281,000	3.07	2,994	300	607	1,213	5,114	166	3.18
Montana	2,858,174	131,570	53,942		3,043,686	7,879,000	2.59	1,576	293	360	451	2,680	171	6.64
New Mexico	2,338,094	45,389	51,635	121,733	2,556,851	8,611,000	3.37	2,248	416	322	458	3,444	202	3.68
North Carolina	58,160	524	6,469		65,153	283,000	4.34	65	28	19	28	140	272	1.71
North Dakota	1,035,923	258,183	30,514		1,324,620	2,445,000	1.85	718	74	76	439	1,307	153	6.61
Ohio	24,930,193	2,741,751	362,168		28,034,112	54,057,000	1.93	27,544	3,347	3,935	4,832	39,658	151	4.67
Oklahoma	2,232,901	23,353	69,586		2,325,840	7,667,000	3.30	3,078	853	677	1,023	5,631	153	2.70
Pennsylvania, bituminous	114,456,238	7,584,846	1,517,142	13,369,793	136,928,019	287,899,000	2.10	103,698	14,697	19,067	19,336	156,798	200	4.36
South Dakota	5,180	9,267			14,447	42,000	2.91	49				49	143	2.06
Tennessee	5,040,944	113,934	98,170	200,963	5,454,011	10,077,000	1.85	5,171	1,059	825	1,259	8,314	211	3.11
Texas	982,129	7,910	18,336		1,008,375	1,566,000	1.55	1,406	194	193	315	2,108	150	3.19
Utah	4,349,925	42,235	50,709	247,473	4,690,342	11,991,000	2.56	2,570	585	451	835	4,441	179	[1] 5.90
Virginia	12,032,321	113,573	39,929	613,620	12,799,443	23,496,000	1.84	6,686	2,135	2,442	2,414	13,677	254	3.69
Washington	2,316,191	114,623	56,593	50,483	2,537,890	9,176,000	3.62	2,059	379	537	751	3,726	193	3.52
West Virginia	118,191,674	2,839,028	544,107	806,150	122,380,959	209,655,000	1.71	60,323	17,240	14,795	17,831	110,189	225	4.94
Wyoming	6,245,947	115,757	191,528		6,553,232	18,275,000	2.79	3,934	776	601	927	6,238	178	5.90
Total bituminous	477,172,812	21,351,223	5,776,103	15,752,603	520,052,741	1,060,402,000	2.04	367,456	68,526	70,559	81,952	588,493	195	4.52
Pennsylvania anthracite	53,768,372	2,884,577	5,164,200		61,817,149	327,665,000	5.30	78,773	17,000	24,795	39,744	160,312	182	2.12
Grand total	530,941,184	24,235,800	10,940,303	15,752,603	581,869,890	1,388,067,000	2.38	446,229	85,526	95,354	121,696	748,805	192	4.04

[1] Probably too high because of the practice, common in some districts, of men going into mines to shoot coal and load mine cars on days when the tipples or mines, as a whole, are not in operation.

TABLE 4.—*Production, imports, exports, and consumption of anthracite and bituminous coal, 1916–1925, in net tons*

Calendar year	Production	Imports	Exports to—		Net changes in stocks [1]	Consumption in the United States [2]
			Canada and Mexico	Other countries (sea borne)		
Anthracite:						
1916	87,578,000	6,000	4,558,000	108,000	−4,200,000	87,118,000
1917	99,612,000	13,000	5,917,000	90,000	−450,000	94,068,000
1918	98,826,000	37,000	4,910,000	58,000	+1,120,000	92,775,000
1919	88,092,000	83,000	4,871,000	106,000	+1,680,000	81,518,000
1920	89,598,000	32,000	4,987,000	417,000	−1,560,000	85,786,000
1921	90,473,000	9,000	4,569,000	108,000	+3,855,000	81,950,000
1922	54,683,000	234,000	2,579,000	70,000	−4,530,000	56,798,000
1923	93,339,000	300,000	4,993,000	97,000	+1,635,000	86,914,000
1924	87,927,000	118,000	3,932,000	86,000	+3,310,000	80,717,000
1925	61,817,000	383,000	3,098,000	81,000	−5,040,000	64,061,000
Bituminous:						
1916	502,520,000	1,714,000	13,481,000	7,774,000	−11,000,000	493,979,000
1917	551,791,000	1,448,000	18,324,000	5,506,000	----------	529,409,000
1918	579,386,000	1,457,000	18,316,000	4,034,000	+27,900,000	530,593,000
1919	465,860,000	1,012,000	12,064,000	8,050,000	−34,900,000	481,658,000
1920	568,667,000	1,245,000	16,458,000	22,059,000	+22,800,000	508,595,000
1921	415,922,000	1,258,000	13,590,000	9,541,000	+2,200,000	391,849,000
1922	422,268,000	5,060,000	10,938,000	1,475,000	−12,000,000	426,915,000
1923	564,565,000	1,882,000	16,960,000	4,494,000	+26,000,000	518,993,000
1924	483,687,000	417,000	12,746,000	4,354,000	−17,000,000	484,004,000
1925	520,053,000	602,000	13,547,000	3,915,000	+4,000,000	499,193,000

[1] Anthracite figures are producers' stocks; bituminous, consumers' stocks. Plus sign denotes coal produced but added to stocks and not consumed; minus sign denotes coal consumed that was withdrawn from stocks carried over from preceding year. Anthracite data from Federal Trade Commission cost reports (Coal, No. 2, p. 27) and hearings before Frelinghuysen coal committee, S. Res. 126, 66th Congress, 1st session (part 1, p. 308). These anthracite figures through 1918 represent coal years, since then calendar years, and are in part estimates. Bituminous data from reports on consumers' stocks of bituminous coal, issued by United States Geological Survey and article in Coal Age, Aug. 26, 1920, p. 429, by C. E. Lesher, formerly coal statistician, United States Geological Survey, and director of statistical division, United States Fuel Administration.

[2] Production tonnage, plus imports and minus exports, plus or minus the decrease or increase, respectively, of the net change in coal stocks.

TABLE 5.—*Net changes in consumers' stocks of bituminous coal, as indicated by the periodic surveys of stocks, January 1, 1924, to December 31, 1925*

Period	Net change in stocks (net tons)	Average rate of change per month (net tons)
1924		
Jan. 1 to June 1	−11,000,000	−2,200,000
June 1 to Sept. 1	−4,000,000	−1,333,000
Sept. 1 to Dec. 31 [1]	−2,000,000	−500,000
1925		
Jan. 1 [1] to Mar. 1	−1,000,000	−500,000
Mar. 1 to June 1	−6,000,000	−2,000,000
June 1 to Sept. 1	+5,000,000	+1,667,000
Sept. 1 to Nov. 1	+5,000,000	+2,500,000
Nov. 1 to Dec. 31	+1,000,000	+500,000

[1] Stocks on these dates estimated from those reported on Sept. 1 and on Mar. 1, 1925, at 45,000,000.

TABLE 6.—*Production and value of anthracite and bituminous coal, 1916–1925*

Year	Net tons		Value		Grand total	
	Anthracite	Bituminous coal	Anthracite	Bituminous coal	Net tons	Value
1916	87,578,493	502,519,682	$202,009,561	$665,116,077	590,098,175	$867,125,638
1917	99,611,811	551,790,563	283,650,723	1,249,272,837	651,402,374	1,532,923,560
1918	98,826,084	579,385,820	336,480,347	1,491,809,940	678,211,904	1,828,290,287
1919	88,092,201	465,860,058	364,926,950	1,160,616,013	553,952,259	1,525,542,963
1920	89,598,249	568,666,683	434,252,000	2,129,933,000	658,264,932	2,564,185,000
1921	90,473,451	415,921,950	452,305,000	1,199,983,000	506,395,401	1,652,288,000
1922	54,683,022	422,268,099	273,700,000	1,274,820,000	476,951,121	1,548,520,000
1923	93,339,009	564,564,662	506,787,000	1,514,621,000	657,903,671	2,021,408,000
1924	87,926,862	483,686,538	477,231,000	1,062,626,000	571,613,400	1,539,857,000
1925	61,817,149	520,052,741	327,665,000	1,060,402,000	581,869,890	1,388,067,000

METHODS OF COLLECTING THE STATISTICS

VOLUNTARY COOPERATION

The principal statistics for each State during the last two years are given in Tables 2 and 3. These statistics are obtained from the producers' written reports, most of them signed by officers of the companies that furnish the figures. The reports are collected by correspondence, which is supplemented by visits of field agents if correspondence has failed. The Bureau of Mines has no power to compel the filing of reports.

Under this system accurate results can be obtained only by the generous cooperation of the producers in furnishing returns, voluntarily. The operators generally make cordial responses to the bureau's questionnaires, with which they have become familiar through more than 40 years of contact and cooperation, so that a very large percentage of the returns are obtained by mail, leaving relatively few to be obtained by personal visits.

In 1925, as in other years, however, a number of operators declined to state the value of the coal they sold. The number and the importance of these failures to make returns and the method used in estimating the values not reported are explained on page 467.

COMPLETENESS OF THE RETURNS

Commercial mines and wagon mines.—A complete count of the thousands of wagon mines and country coal banks from which bituminous coal is dug in the United States could be made only by sending agents up every creek and along every hillside in the coal-bearing regions. The cost of such a count would prohibit it, and in practice a limit must be set to the size of the mines to be considered. The Federal Census Bureau sets this limit at mines producing about 1,000 tons a year. Many of the States that publish statistics set the limit higher. The Pennsylvania Department of Mines, for example, covers only enterprises employing as many as 10 men.

The Bureau of Mines desires to ascertain the total output of coal from all sources, large or small, in order to find the rate at which the country's resources are being drawn upon. In practice, however, it has been found advisable to employ different methods for the commercial mines, on the one hand, and the "wagon mines," on the other.

The line between the commercial mine and the small working, however, is difficult to draw. Mere size of output is not a criterion, for some wagon mines ship rather large quantities of coal. Absence of a railroad switch is not a criterion, for this would exclude from the commercial class some large mines that ship by river or truck or that deliver their product to associated industries at the mouth of the mine.

In practice the Bureau of Mines has found a safer criterion to be size in conjunction with steady operation. All mines that produce 10,000 tons or more a year are classed by the bureau as "commercial mines," but the commercial class also includes much smaller mines, some of which have an annual output of hardly 1,000 tons but produce year after year and show a fairly continuous existence.

These smaller properties sometimes ship by rail but oftener serve a local market by wagon or truck or supply a local manufacturing plant near the tipple. There are many hundreds of such small operations that continue to contribute to the supply of coal year after year, and the bureau endeavors to include them in its lists of commercial producers. A mine may be shifted from the list of commercial mines to the list of wagon mines or vice versa, as the course of the work at the mine may make such a shift advisable.

Method of obtaining data on commercial mines.—For the commercial mines statistics can be obtained largely by correspondence. To the mailing list new names are constantly being added from the trade journals, from the records of State mine inspectors, from reports of field agents, and from reports by the producers themselves. At intervals the list is checked against lists kept by associations of operators or State officials and lists of shippers kept by railroad-car distributors. Every tenth year the list is further supplemented by data collected by the enumerators of the Federal Census Bureau, who canvass the entire country.

Schedules of inquiry are mailed by the Bureau of Mines to all producing companies listed, and no company is dropped from the list until it has been definitely accounted for. To follow up companies from which no reply is received by correspondence, cooperative arrangements have been made with State geologists and coal-mine inspectors, secretaries of operators' associations, and other local agents, who make inquiry in person and report to Washington. In the Rocky Mountain States the work of following up the returns is now done by the branch offices maintained by the Bureau of Mines at Denver, Salt Lake City, and San Francisco. Areas to which no permanent local representative of the bureau has been assigned can be covered only by sending out a field agent from Washington, and the present plans include regular work by such agents every year.

Some of the mines are operated so intermittently that the owners can not be found at the end of the year, and recourse must be had to railroads to find the number of tons of coal shipped by these mines, from which estimates of the number of men employed and the value of the product can be made. Such estimates are made in order to round out totals, but only when the evidence shows that a mine was in operation during the year and when all other means of getting the exact figures have failed. Wherever in this report the inclusion of estimates introduces the probability of significant error, that fact is indicated.

Method of obtaining data on wagon mines.—The method just described has yielded satisfactory figures for the operation of mines on the list of commercial producers. To handle the sporadic "wagon mines," "fly-by-nights," and "snowbirds" that appear, mushroomlike, at times of shortage and high prices, requires a different method. All these workings are referred to by the bureau as "wagon mines," the term in common usage that most nearly describes them. Where these wagon mines are within reach of a railroad and are therefore able to demand railroad cars for shipment of their product, they may have a material influence on the car supply, on the spot price, on the rate of wages, and on the prevailing quality of coal, an influence out of all proportion to the actual tonnages they ship. In 1920, for example, there were more than 4,000 such wagon mines in operation, all demanding railroad cars, and they shipped by rail about 4,500,000 tons of bituminous coal. They are chiefly important in the Appalachians, where coal outcrops abundantly along many of the railroads and surfaced highways. Under such conditions coal can be dug with almost no capital investment. Labor cost at wagon mines is high; they can compete only in periods of high prices but can open or close without thought of fixed charges, depreciation, and maintenance; their only consideration is the price of coal on the spot market.

When coal prices are high the wagon mines are important enough to be included in the statistics, but how to obtain complete information about them is a problem. After experimenting with various methods the bureau has found that the only feasible plan is to ask each railroad for a list of the wagon mines on its lines that shipped coal during the year and for the number of cars shipped by each. Such information was generously furnished by the railroads in 1920, 1922, and 1923 and gave virtually complete information as to the number, location, and output of the wagon mines that shipped by rail in those years.

On the other hand, when the price is low, wagon mines close as suddenly as they opened and disappear as a factor in the trade; therefore in 1921 and 1924 no attempt was made to get information on the output of these mines.

Wagon mines not canvassed in 1925.—In 1925, also, spot prices were very low, and conditions did not favor the operation of wagon mines. No canvass was therefore made, and statistics for 1925 relate to the commercial mines exclusively. It is not to be inferred, however, that the figures given are incomplete. A complete count of all the wagon mines shipping by rail in 1925 would have added only a few thousand tons to the totals given in this report.

Data on labor in wagon mines.—No reports on the number of employees or time worked have ever been obtained from the wagon mines, and in this report all the statistics on men employed, days worked, output per man, and the like for the years in which the tonnage of wagon mines was covered are calculated from the returns of the commercial mines alone.

Omission of country coal banks.—These methods are believed to yield virtually complete returns for all mines, big and little, that ship by rail or water and for all those of commercial size that serve a purely local market. The data herein do not cover the tiny workings that produce less than 1,000 tons a year and are situated at

points remote from a railroad—workings that can best be described as "country coal banks." Little openings of this kind, where one or two men dig a few hundred bushels for sale in the neighborhood or farmers come with their wagons and trucks to dig their own fuel, are common in regions where coal outcrops. Although their number runs into the thousands, their combined output is so small as to be negligible; their product does not involve the use of railroad cars and does not compete with the output of commercial mines. When in the past the United States Geological Survey attempted to obtain data on these coal banks regularly, the maximum total output reported for them was about 1,000,000 tons a year, a quantity too small to justify the cost of collecting the information.

UNITS OF MEASUREMENT

The standard unit of measurement adopted for this report is the net or short ton of 2,000 pounds, but as Pennsylvania anthracite is mined and sold by the gross or long ton of 2,240 pounds, that unit is used in the part of the report dealing with anthracite. Unless the unit is otherwise expressly stated, the word "ton" as here used means the net ton of 2,000 pounds, to which all other figures, however reported, have been reduced.

There is a steadily growing sentiment in favor of the general use of the net ton of 2,000 pounds as the standard unit of the coal trade, particularly for bituminous coal in the Eastern States, where both gross and net tons are now used. The use of both units is, of course, undesirable, but as some State and municipal laws require the use of the gross ton, and as freight rates throughout a part of the Eastern States are now fixed accordingly, it is difficult to make an immediate change to a standard unit. In reports on foreign trade and shipping rates quantities are expressed in either gross or metric tons, and here, too, the use of more than one unit is undesirable. The general use of the net ton in the United States, even in the anthracite region, is here recommended.

ANTHRACITE, LIGNITE, AND BITUMINOUS COAL

Two industries.—In the statistical reports of the Bureau of Mines the anthracite industry of Pennsylvania and the bituminous coal industry are listed separately. Both produce coal, and between them there exists a certain degree of competition, especially in the sale of the anthracite steam sizes, but the differences in corporate organization, in railroad relations, in geographic position, in natural conditions of mining, in marketing practices, in methods of preparing the coal for the market, and in the nature of the demand are so pronounced that they require separate treatment.

Pennsylvania anthracite industry.—The anthracite industry, as understood in the trade and as used in this report, is confined to a narrow area of 480 square miles in eastern Pennsylvania. It includes the familiar Lehigh, Schuylkill, and Wyoming regions and also the little outlying Bernice Basin in Sullivan County. In this sharply restricted region are concentrated mines employing 160,000 men and producing 90,000,000 net tons of coal a year.

Other anthracite and semianthracite.—True anthracite is also produced in the Crested Butte area of Colorado and in New Mexico, but

the quantities are very small—a few thousand tons only per annum—and the operations have no affiliation with the great Pennsylvania anthracite field; in labor relations, in railroad connections, and in marketing organization they are more closely related to the bituminous mines in the same States. For these reasons they are grouped in the statistics with the bituminous coal industry rather than with Pennsylvania anthracite.

For the same reasons, also, the semianthracite mines of Virginia and Arkansas are grouped with the bituminous coal industry. Producing a fuel which, although not true anthracite, is admirably adapted to household use, they yet have no concern with the labor, freight-rate, and marketing problems of the close-knit Pennsylvania anthracite industry. The semianthracite mines in Montgomery and Pulaski Counties, Va., produced 267,000 tons in 1925 and those in Arkansas 232,000 tons.

Lignite.—The statistics of the bituminous coal industry, therefore, include these small outlying tonnages of anthracite and semianthracite and lignite produced in the United States. In the classification of coals adopted by the United States Geological Survey, the "black lignites" mined in the Far West are termed subbituminous coals. True lignite, though it occurs in enormous amounts in the Northern Great Plains and Gulf coast geological provinces, is as yet little mined in the United States. The production in 1925 was about 2,228,500 tons, of which 1,325,000 was mined in North Dakota, 14,500 in South Dakota, 63,000 in eastern Montana, and 826,000 in the lignite area of Texas. Although the producers of this coal have certain problems in common, they do not form a separate national interest such as do the producers in the brown coal industry of Germany. Their system of mining resembles that used by the producers of bituminous coal. Some day, when lignite rises to a commanding place in the fuel supply of the country, there will be need of showing it separately in the statistics of production; at present its statistics can best be combined with those for the bituminous coal industry.

GROWTH OF THE INDUSTRY

TABLE 7.—*Growth of the bituminous coal mining industry, 1890–1925*

Year	Production (millions of net tons)	Value (millions of dollars)	Men employed (thousands)	Calculated capacity (millions of net tons)		Average number of days worked	Average number of days lost on account of —			Value per ton	Net tons per man		Per cent mined by machine
				At 308 days	At 280 days		Strikes	Other causes	Total lost		Per day	Per year	
1890	111	110	192	152	137	226	(1)	(1)	82	$0.99	2.56	579	(1)
1891	118	117	206	163	148	223	(1)	(1)	85	.99	2.57	573	5.3
1892	127	125	213	178	162	219	(1)	(1)	89	.99	2.72	596	(1)
1893	128	123	230	194	174	204	(1)	(1)	104	.96	2.73	557	(1)
1894	119	108	245	214	196	171	(1)	(1)	137	.91	2.84	486	(1)
1895	135	116	240	215	196	194	(1)	(1)	114	.86	2.90	563	(1)
1896	138	115	244	221	202	192	(1)	(1)	116	.83	2.94	564	11.9
1897	148	120	248	232	213	196	(1)	(1)	112	.81	3.04	596	15.3
1898	167	133	256	243	221	211	(1)	(1)	97	.80	3.09	651	19.5
1899	193	168	271	254	230	234	8	66	74	.87	3.05	713	22.7
1900	212	221	304	279	255	234	5	69	74	1.04	2.98	697	24.9
1901	226	236	340	309	281	225	2	81	83	1.05	2.94	664	25.6
1902	260	291	370	348	316	230	7	71	78	1.12	3.06	703	26.8
1903	283	352	416	387	350	225	3	80	83	1.24	3.02	680	27.6
1904	279	306	438	425	386	202	8	98	106	1.10	3.15	637	28.2
1905	315	335	461	460	417	211	2	95	97	1.06	3.24	684	32.8
1906	343	381	478	496	451	213	28	67	95	1.11	3.36	717	34.7
1907	395	451	513	520	473	234	1	73	74	1.14	3.29	769	35.1
1908	333	374	516	531	482	193	11	104	115	1.12	3.34	644	37.0
1909	380	405	543	560	510	209	1	98	99	1.07	(1)	(1)	37.5
1910	417	469	556	592	538	217	35	56	91	1.12	3.46	751	41.7
1911	406	451	550	593	538	211	2	95	97	1.11	3.50	738	43.9
1912	450	518	549	622	566	223	10	75	85	1.15	3.68	820	46.8
1913	478	565	572	635	577	232	5	71	76	1.18	3.61	837	50.7
1914	423	493	584	668	608	195	19	94	113	1.17	3.71	724	51.7
1915	443	502	557	672	610	203	4	101	105	1.13	3.91	794	55.0
1916	503	665	561	673	613	230	4	74	78	1.32	3.90	896	56.5
1917	552	1,249	603	699	636	243	4	61	65	2.26	3.77	915	55.5
1918	579	1,492	615	717	650	249	1	58	59	2.58	3.78	942	55.9
1919	466	1,161	622	736	669	195	25	88	113	2.49	3.84	749	59.2
1920	569	2,130	610	796	725	220	6	82	88	3.75	4.00	881	59.8
1921	416	1,200	664	860	781	149	3	156	159	2.89	4.20	627	65.6
1922	422	1,275	688	916	832	142	78	88	166	3.02	4.28	609	63.2
1923	565	1,515	705	970	885	179	2	127	129	2.68	4.47	801	66.9
1924	484	1,063	620	871	792	171	7	130	137	2.20	4.56	781	69.5
1925	520	1,060	588	822	748	195	2	111	113	2.04	4.52	884	70.6

[1] No data.

TABLE 8.—*Growth of the anthracite mining industry, 1890–1925*

Year	Production (millions of gross tons)	Value (millions of dollars)	Employees (thousands)	Average number of days worked	Average days lost on account of strikes	Net tons per man		Washery and dredge shipments (millions of gross tons)	Per cent of shipments that were domestic sizes (excluding pea)
						Per day	Per year		
1890	41	66	126	200	(1)	1.85	369	(2)	76.9
1891	45	74	126	203	(1)	1.98	401	0.1	75.7
1892	47	82	129	198	(1)	2.06	407	.1	76.0
1893	48	86	133	197	(1)	2.06	406	.2	74.9
1894	46	78	132	190	(1)	2.08	395	.6	73.7
1895	52	82	143	196	(1)	2.07	406	1.1	69.9
1896	49	82	149	174	(1)	2.10	365	.9	70.3
1897	47	79	150	150	(1)	2.34	351	1.0	68.5
1898	48	75	146	152	(1)	2.41	367	1.1	67.3
1899	54	88	140	173	(1)	2.50	433	1.4	66.1
1900	51	86	144	166	24	2.40	398	2.1	64.7
1901	60	113	145	196	----------	2.37	464	2.6	64.2
1902	37	76	148	116	96	2.40	279	2.0	61.0
1903	67	152	150	206	----------	2.41	496	3.6	63.6
1904	65	139	156	200	−½	2.35	469	2.8	62.0
1905	69	142	165	215	−½	2.18	470	2.6	60.9
1906	64	132	162	195	37	2.25	439	3.8	59.1
1907	76	164	167	220	----------	2.33	512	4.3	58.6
1908	74	158	174	200	----------	2.39	478	3.6	59.3
1909	72	149	(1)	205	−½	(1)	(1)	3.7	58.3
1910	75	161	169	229	−½	2.17	498	3.3	58.6
1911	81	175	173	246	−½	2.13	524	3.2	59.4
1912	75	178	174	231	40	2.10	485	3.2	60.8
1913	82	195	176	257	3	2.02	520	2.1	61.7
1914	81	188	180	245	1	2.06	505	1.7	61.4
1915	79	185	177	230	1	2.19	504	2.5	60.1
1916	78	202	160	253	6	2.16	548	3.1	60.5
1917	[3] 89	284	154	285	1	[3] 2.27	[3] 646	5.4	61.0
1918	[3] 88	336	147	293	−½	[3] 2.29	[3] 672	6.6	60.1
1919	79	365	155	266	2	2.14	570	3.3	64.2
1920	[3] 80	434	145	271	13	[3] 2.28	[3] 618	5.0	63.1
1921	81	452	160	271	5	2.09	567	1.6	66.5
1922	[3] 49	274	157	151	125	[3] 2.31	[3] 349	3.2	62.9
1923	83	507	158	268	17	2.21	592	4.1	63.7
1924	79	477	160	274	7	2.00	550	1.4	65.3
1925	55	328	160	182	95	2.12	386	1.4	66.4

[1] No data. [2] Less than one-tenth million tons. [3] Years of heavy washery output.

TABLE 9.—*Shift in disposal of total output of bituminous coal, 1890–1925*

Year	Percentage of total—				Year	Percentage of total—			
	Loaded at mines for shipment	Made into coke at mines	Sold to local trade	Used at mines for steam and heat		Loaded at mines for shipment	Made into coke at mines	Sold to local trade	Used at mines for steam and heat
1890	78.5	13.8	6.3	1.4	1918	86.8	7.8	3.2	2.2
1895	78.7	13.6	6.2	1.5	1919	87.8	5.9	3.9	2.4
1900	81.5	13.0	3.7	1.8	1920	88.8	5.4	3.7	2.1
1905	80.9	13.5	3.4	2.2	1921	91.8	2.1	3.9	2.2
1910	82.2	12.5	3.0	2.3	1922	90.9	3.1	4.1	1.9
1915	85.8	9.2	2.8	2.2	1923	89.6	4.9	3.9	1.6
1916	84.3	10.4	3.2	2.1	1924	91.3	3.0	4.3	1.4
1917	85.2	9.1	3.5	2.2	1925	91.8	3.0	4.1	1.1

COMPETITION OF COAL AND OTHER SOURCES OF POWER

Tables 10 to 12 compare the rate of growth of coal and of the other principal sources of energy—oil, gas, and water power. While coal production in 1925 was far below the war-time maximum, production of oil, natural gas, and water power has enormously increased since the war.

In order to compare the several sources of energy it is necessary to reduce them to a common denominator. This is done in Table 10, which shows the energy equivalent in British thermal units of each of the fuels. Water power is represented by the equivalent of the fuel necessary to perform the same work. The total of the energy from all sources is given in the last column of the table. For 1925 it amounts to 22,827 trillion British thermal units, the greatest in the history of the country. Thus, while the consumption of coal has fallen since the war, the total consumption of energy has increased.

TABLE 10.—*Annual supply of energy from mineral fuels and water power in the United States, 1819–1925*

[Figures represent trillions of British thermal units and because of rounding do not always add across exactly. Water power is represented by British thermal units of coal necessary to produce the same amount of power. Figures represent production except those for oil imports and take no account of changes of stock]

Year	Anthracite	Bituminous coal	Total coal	Domestic oil	Natural gas	Imported oil	Total oil and gas	Total mineral fuels	Water power [1]	Grand total, including water power
1819	[2]		[2]					[2]	[1]	[1]
1829	4	3	6					6	[1]	[1]
1839	27	41	68					68	[1]	[1]
1849	109	64	173					173	[1]	[1]
1859	262	158	419	[2]				419	[1]	[1]
1869	464	415	879	25			25	904	[1]	[1]
1879	822	993	1,815	119	[2]		119	1,934	[1]	[1]
1889	1,239	2,507	3,746	211	[3] 268		479	4,225	91	4,316
1899	1,643	5,065	6,708	342	[3] 240		582	7,291	135	7,426
1909	2,205	9,949	12,155	1,099	517	[4]	1,616	13,771	411	14,182
1913	2,490	12,535	15,025	1,491	626	102	2,219	17,243	588	17,831
1918	2,688	15,180	17,868	2,136	775	226	3,137	21,005	837	21,842
1919	2,396	12,206	14,602	2,270	802	317	3,389	17,991	892	18,883
1920	2,437	14,899	17,336	2,658	858	637	4,153	21,489	971	22,460
1921	2,461	10,897	13,358	2,833	712	752	4,297	17,655	908	18,563
1922	1,487	11,063	12,551	3,345	820	764	4,929	17,480	1,024	18,504
1923	2,539	14,791	17,330	4,394	1,082	492	5,968	23,298	1,136	24,434
1924	2,392	12,672	15,064	4,284	1,227	467	5,978	21,042	1,167	22,209
1925	1,681	13,625	15,306	4,582	1,278	371	6,231	21,537	1,290	22,827

[1] No figures for water power are available before 1889. The fuel equivalent for water power is calculated from the reported horsepower of installed water wheels, assuming a capacity factor of 20 per cent for manufactures and mines and of 40 per cent for public utilities, and assuming that the theoretical thermal equivalent of 1 horsepower hour (2,547 British thermal units) is 7 per cent of the British thermal units that would have been consumed in generating 1 horsepower hour from fuels in practice. For 1919 to 1925, however, actual reports of the horsepower hours produced by water in electric utility plants, as recorded by the U. S. Geological Survey, have been used.

[2] Less than 0.5.

[3] Based on the amount of coal displaced by gas, as estimated by the gas companies at the time.

[4] Imports negligible before 1913.

To make comparison easier, the figures of heat units are reduced to index numbers in Table 11, taking the year 1918 as 100. It will be seen that the production of bituminous coal was 10 per cent less in 1925 than in 1918, in spite of the demand for replacement of anthracite during the miners' strike. The production of all coal

was 14 per cent less than in 1918. The production of oil, on the contrary, was 115 per cent greater and the production of natural gas 65 per cent greater. Imports of oil in the meantime increased 64 per cent, and the total supply of energy in the form of oil and gas from all sources increased 99 per cent over 1918. Water power, in the same period, increased 54 per cent. The total production of energy rose to 5 per cent above 1918. To sum up, while coal fell off notably, oil doubled, and gas and water power both rose over 50 per cent. The total supply of energy increased, but all the increase and some of the old demand went to the competitors of coal.

TABLE 11.—*Relative rates of growth of coal, oil, and water power in the United States, 1819–1925*

[The figures for 1918 are represented by the number 100, and the figures for all other years are expressed as a percentage of the 1918 rate]

Year	Anthracite	Bituminous coal	Total coal	Domestic oil	Natural gas	Imported oil	Total oil and gas	Total mineral fuels	Water power	Grand total, including water power
1819	(1)		(1)					(1)	(2)	(2)
1829	(1)	(1)	(1)					(1)	(2)	(2)
1839	1	(1)	(1)					(1)	(2)	(2)
1849	4	(1)	1					1	(2)	(2)
1859	10	1	2	(1)			(1)	2	(2)	(2)
1869	17	3	5	1			1	4	(2)	(2)
1879	31	6	10	6	(1)		4	9	(2)	(2)
1889	46	17	21	10	35		15	20	11	20
1899	61	33	37	16	31		19	35	16	34
1909	82	66	68	51	67	(3)	52	66	49	65
1913	93	83	84	70	81	45	71	82	70	82
1918	100	100	100	100	100	100	100	100	100	100
1919	89	80	81	106	103	140	108	86	107	86
1920	91	98	97	124	111	282	132	102	116	103
1921	92	72	74	132	92	333	137	84	109	85
1922	55	73	70	156	106	338	157	83	122	85
1923	94	97	97	206	140	218	191	111	136	112
1924	89	83	84	201	158	207	191	100	139	102
1925	63	90	86	215	165	164	199	103	154	105

[1] Less than 0.5.
[2] No data for water power prior to 1889.
[3] Imports negligible prior to 1913.

Formerly it was said that water power, oil, and gas produced only an insignificant part of the total supply of energy. That is no longer true. In 1913 oil and gas contributed only 12.9 per cent of the energy of fuels; in 1918, only 14.9 per cent, but in 1925 oil and gas contributed 28.9 per cent. The share of coal declined in the meantime from 87.1 per cent in 1913 to 71.1 per cent in 1925. Coal is still the dominant source, but up to 1925, at least, its share was declining. Of its competitors, oil and gas are the larger; water power, though growing fast, contributed only 6 per cent as much energy in 1925 as did the fuels.

TABLE 12.—*Per cent of total heating value contributed by the several mineral fuels in the United States, 1819–1925*

Year	Anthracite	Bituminous coal	Total coal	Domestic oil	Natural gas	Imported oil	Total oil and gas	Grand total fuels	Water power per cent of fuels [1]
1819	100.0		100.0					100.0	(1)
1829	58.4	41.6	100.0					100.0	(1)
1839	40.2	59.8	100.0					100.0	(1)
1849	62.8	37.2	100.0					100.0	(1)
1859	62.3	37.7	100.0	(2)				100.0	(1)
1869	51.3	45.9	97.2	2.8	(2)		2.8	100.0	(1)
1879	42.5	51.3	93.8	6.2	(2)		6.2	100.0	(1)
1889	29.3	59.3	88.6	5.0	[3] 6.4		11.4	100.0	2.2
1899	22.5	69.5	92.0	4.7	[3] 3.3		8.0	100.0	1.9
1909	16.0	72.2	88.2	8.0	3.8	(2)	11.8	100.0	3.0
1913	14.4	72.7	87.1	8.7	3.6	0.6	12.9	100.0	3.4
1918	12.8	72.3	85.1	10.1	3.7	1.1	14.9	100.0	4.0
1919	13.3	67.9	81.2	12.6	4.5	1.7	18.8	100.0	5.0
1920	11.4	69.3	80.7	12.4	4.0	2.9	19.3	100.0	5.0
1921	14.0	61.7	75.7	16.0	4.0	4.3	24.3	100.0	5.1
1922	8.5	63.3	71.8	19.1	4.7	4.4	28.2	100.0	5.9
1923	10.9	63.5	74.4	18.9	4.6	2.1	25.6	100.0	4.9
1924	11.4	60.2	71.6	20.4	5.8	2.2	28.4	100.0	5.5
1925	7.8	63.3	71.1	21.3	5.9	1.7	28.9	100.0	6.0

[1] No figures for water power are available before 1889; hence to make the figures comparable the data for water power thereafter are expressed as per cent of the fuel total but are not included in the base on which the percentages are computed.

[2] Less than 0.1 per cent.

[3] Figures from 1869 to 1899 based on estimated quantity of coal displaced.

TABLE 13.—*Indicated domestic consumption in the United States of crude petroleum, gas and fuel oils, and natural gas for fuel, contrasted with the equivalent quantity of coal, 1919–1925.*

	Units	1919	1920	1921	1922	1923	1924	1925
1. Indicated domestic consumption of crude petroleum.[1]	Million barrels	423	522	521	585	715	748	810
2. Crude oil run to refinery stills.	do	362	434	443	501	581	644	740
3. Indicated consumption of crude petroleum for fuel (including losses).	do	61	88	78	84	134	104	70
4. Indicated consumption of gas and fuel oils.	do	164	186	196	240	261	293	330
5. Consumption of crude petroleum and gas and fuel oils for fuel.	do	225	274	274	324	395	397	400
6. Energy equivalent of No. 5.	Trillion B. t. u.	1,383	1,681	1,683	1,992	2,422	2,431	2,466
7. Approximate equivalent in coal of No. 5.	Million net tons	53	64	64	76	92	93	94
8. Energy equivalent of natural gas consumed for fuel (gas used in making carbon black not included).	Trillion B. t. u.	748	804	657	762	957	1,059	1,127
9. Approximate equivalent in coal of natural gas in No. 8.	Million net tons	29	31	25	29	37	40	43
10. Percentage of the annual production of coal in the United States for Nos. 6 and 8.	Per cent	15	14	18	22	20	23	24

[1] Production plus imports minus exports plus stocks, including refinery stocks, at beginning of year, minus stocks at end of year.

FUEL ECONOMY

TABLE 14.—*Indicators of the effect of fuel economy on the consumption of coal per unit of performance since the war*

	Pounds	Per cent reduction
United States:		
Steam railroads—		
Pounds per 1,000 gross ton-miles freight service—		
Average, 1919–20	170	
Average, 1925	140	18
Pounds per passenger-train car-mile—		
Average, 1919–20	18.5	
Average, 1925	16.1	13
Steam electric power plants—		
Pounds per kilowatt hour, 1919	3.2	
Pounds per kilowatt hour, 1925	2.1	34
Iron and steel—Pounds coking coal per ton of pig [1]—		
1918	3,577	
1924	3,248	9
Coke manufacture: Savings of heat values through recovery of gas tar, light oils, and breeze by extension of by-product in place of beehive coking, 1913 to 1923, expressed as per cent of coal used for coke in 1923 [2]		11
Great Britain:		
Steam electric power plants—		
Pounds per kilowatt hour, 1920	3.4	
Pounds per kilowatt hour, 1924	2.5	26

[1] Includes only savings through higher yields of merchantable coke per ton of coal charged and lower consumption of coke per ton of iron. Excludes economies through recovery of by-products, which are treated in next item.

[2] These by-products are used in part for boiler fuel, in part for metallurgical purposes, in part for domestic heating and cooking, and to a small extent for automotive fuel.

TABLE 15.—*Fuel consumption by electric public utility plants in the United States, 1919–1925*

[From reports of division of power resources, United States Geological Survey]

Year	Kilowatt hours generated (billions)			Per cent of total		Fuel consumed, coal and coal equivalent, net tons	Pounds of fuel consumed by fuel stations	
	Total	By water	By fuel [1]	By water	By fuel		Per kilowatt hour	Per horsepower hour
1919	38,921	14,606	24,315	37.5	62.5	38,880,000	3.2	2.4
1920	43,555	16,150	27,405	37.1	62.9	41,420,000	3.0	2.2
1921	40,976	14,971	26,005	36.5	63.5	35,240,000	2.7	2.0
1922	47,659	17,206	30,453	36.1	63.9	38,000,000	2.5	1.9
1923	55,675	19,348	36,327	34.8	65.2	43,522,000	2.4	1.8
1924	59,013	19,969	39,044	33.8	66.2	43,130,000	2.2	1.64
1925	65,801	22,322	43,479	33.9	66.1	44,700,000	2.1	1.57

[1] Includes power generated from wood, which in 1925 amounted to 249,000,000 kilowatt hours. This is excluded in the calculation of total fuel consumed and average consumption per kilowatt hour and horsepower hour given in the last three columns.

TABLE 16.—*Consumption of coal (or coal equivalent of other fuel) by locomotives in road service on class 1 steam railroads, as reported monthly by the Interstate Commerce Commission, 1916—1925*

Year	Pounds of coal per 1,000 gross ton-miles, including locomotive and tender	Pounds of coal per passenger-train car-mile	Year	Pounds of coal per 1,000 gross ton-miles, including locomotive and tender	Pounds of coal per passenger-train car-mile
1916	[1] 169	[1] 18.5	1921	162	17.7
1917	[1] 176	[1] 19.4	1922	163	17.9
1918	[1] 174	[1] 19.2	1923	161	18.1
1919	[1] 164	[1] 18.1	1924	149	17.0
1920	[2] 174	18.8	1925	140	16.1

[1] From reports of the fuel conservation section of the United States Railroad Administration, prepared under direction of Eugene McAuliffe. These reports gave the consumption per 1,000 gross ton-miles, excluding locomotive and tender, from which the ratio used above has been estimated.

[2] Estimated from the ratio per 1,000 gross ton-miles, excluding locomotive and tender, which bears a practically constant relation to the other.

TABLE 17.—*Fuel economy as indicated by the coal equivalent of the thermal by-products of coking in by-product ovens, 1913–1924*

[By-products included are coke breeze, which is not generally recovered in the manufacture of beehive coke, surplus gas not used in heating ovens, tar, and light oil]

Year	Equivalent coal (net tons)	Per cent which this forms of total coal made into coke	Increase in coal equivalent over 1913	Year	Equivalent coal (net tons)	Per cent which this forms of total coal made into coke	Increase in coal equivalent over 1913
1913	2,600,000	3.8		1919	7,575,000	11.5	+4,975,000
1914	2,461,000	4.8	−139,000	1920	9,316,000	12.2	+6,716,000
1915	3,280,000	5.3	+680,000	1921	6,358,000	17.1	+3,758,000
1916	4,375,000	5.4	+1,775,000	1922	9,058,000	16.7	+6,458,000
1917	5,432,000	6.5	+2,832,000	1923	12,417,000	14.7	+9,817,000
1918	6,783,000	8.0	+4,183,000	1924	11,628,000	17.9	+9,028,000

TABLE 18.—*Fuel economy in manufacture of pig iron, 1912–1924*

Year	Pounds coke per gross ton pig iron [1]	Yield of coke from coal (per cent)	Pounds coal per gross ton of pig iron (column 1 divided by column 2)	Year	Pounds coke per gross ton pig iron [1]	Yield of coke from coal (per cent)	Pounds coal per gross ton of pig iron (column 1 divided by column 2)
1912	2,436.5	67.1	3,631.1	1919	2,310.2	67.4	3,427.6
1913	2,433.3	66.9	3,637.2	1920	2,305.6	67.4	3,420.8
1914	2,354.4	66.9	3,519.3	1921	2,200.6	68.0	3,236.2
1915	2,252.0	67.2	3,351.2	1922	2,176.3	68.3	3,186.4
1916	2,285.3	66.8	3,421.1	1923	2,243.3	67.5	3,323.4
1917	2,339.7	66.4	3,523.6	1924	2,212.0	68.1	3,248.2
1918	2,375.2	66.4	3,577.1				

[1] Computed from annual report, American Iron and Steel Institute. No data were published prior to 1912.

PRODUCTION SUMMARIES, BY STATES

TABLE 19.—*Comparison of bituminous coal produced, by States, in 1913, 1923–1925*

State	Production (net tons)				Per cent of increase or decrease		
	1913	1923	1924	1925	1924 to 1925	1923 to 1925	1913 to 1925
Alabama	17,678,522	20,457,649	19,130,184	20,004,395	+4.6	−2.2	+13.2
Arkansas	2,234,107	1,296,892	1,451,503	1,220,039	−15.9	−5.9	−45.4
Colorado	9,232,510	10,346,218	10,444,098	10,310,551	−1.3	−.3	+11.7
Georgia	255,626	75,620	74,947	66,174	−11.7	−12.5	−74.1
Illinois	61,618,744	79,310,075	68,323,281	66,909,359	−2.1	−15.6	+8.6
Indiana	17,165,671	26,229,099	21,480,213	21,224,966	−1.2	−19.1	+23.6
Iowa	7,525,936	5,710,735	5,468,450	4,714,843	−13.8	−17.4	−37.4
Kansas	7,202,210	4,443,149	4,247,733	4,524,251	+6.5	+1.8	−37.2
Kentucky	19,616,600	44,777,317	45,147,204	55,068,670	+22.0	+23.0	+180.7
Maryland	4,779,839	2,285,926	2,133,703	2,694,572	+21.8	+17.9	−43.6
Michigan	1,231,786	1,172,075	831,020	808,233	−2.7	−31.0	−34.4
Missouri	4,318,125	3,403,151	2,480,880	2,694,215	+8.6	−20.8	−37.6
Montana	3,240,973	3,147,678	2,905,365	3,043,686	+4.8	−3.3	−6.1
New Mexico	3,708,806	2,915,173	2,786,063	2,556,851	−8.2	−12.3	−31.1
North Dakota	495,320	1,385,400	1,200,527	1,324,620	+10.3	−4.4	+167.4
Ohio	36,200,527	40,546,443	30,473,007	28,034,112	−8.0	−30.9	−22.6
Oklahoma	4,165,770	2,885,038	2,329,615	2,325,840	−.2	−19.4	−44.2
Pennsylvania	173,781,217	171,879,913	130,633,773	136,928,019	+4.8	−20.3	−21.2
South Dakota	10,540	10,379	12,043	14,447	+20.0	+39.2	+37.1
Tennessee	6,860,184	6,040,268	4,556,555	5,454,011	+19.7	−9.7	−20.5
Texas	2,429,144	1,187,329	1,147,011	1,008,375	−12.1	−15.1	−58.5
Utah	3,254,828	4,720,217	4,488,157	4,690,342	+4.5	−.6	+44.1
Virginia	8,828,068	11,761,643	10,693,464	12,799,443	+19.7	+8.8	+45.0
Washington	3,877,891	2,926,392	2,653,667	2,537,890	−4.4	−13.3	−34.6
West Virginia	71,254,136	107,899,941	101,662,897	122,380,959	+20.4	+13.4	+71.8
Wyoming	7,393,066	7,575,031	6,757,468	6,553,232	−3.0	−13.5	−11.4
Other States	75,151	175,911	173,710	160,646	−7.5	−8.7	+113.8
	478,435,297	564,564,662	483,686,538	520,052,741	+7.5	−7.9	+8.7

TABLE 20.—*Coal produced in 1925, by States, and highest recorded production*

State	1925 (net tons)	Maximum production	
		Year	Net tons
Alabama	20,004,395	1923	20,457,649
Alaska	82,868	1923	119,826
Arkansas	1,220,039	1907	2,670,438
California, Idaho, and Oregon	12,625	1880	280,155
Colorado	10,310,551	1917	12,483,336
Georgia	66,174	1903	416,951
Illinois	66,909,359	1918	89,291,105
Indiana	21,224,966	1918	30,678,634
Iowa	4,714,843	1917	8,965,830
Kansas	4,524,251	1918	7,561,947
Kentucky	55,068,670	1925	55,068,670
Maryland	2,694,572	1907	5,532,628
Michigan	808,233	1907	2,035,858
Missouri	2,694,215	1917	5,670,549
Montana	3,043,686	1918	4,532,505
New Mexico	2,556,851	1918	4,023,239
North Carolina	65,153	1922	78,570
North Dakota	1,324,620	1923	1,385,400
Ohio	28,034,112	1920	45,878,191
Oklahoma	2,325,840	1920	4,849,288
Pennsylvania, bituminous	136,928,019	1918	178,550,741
South Dakota	14,447	1925	14,447
Tennessee	5,454,011	1910	7,121,380
Texas	1,008,375	1913	2,429,144
Utah	4,690,342	1920	6,005,199
Virginia	12,799,443	1925	12,799,443
Washington	2,537,890	1918	4,082,212
West Virginia	122,380,959	1925	122,380,959
Wyoming	6,553,232	1920	9,630,271
Pennsylvania anthracite	61,817,149	1917	99,611,811

PRODUCTION, BY FIELDS

Many requests are received for information on production by trade fields as distinct from States and counties. In Table 21 the operators' reports to the Bureau of Mines have been retabulated according to the 92 fields into which the United States Coal Commission divided the bituminous coal mines. Corresponding figures for 1920 and 1921 will be found in Mineral Resources, 1925, Part II, pages 534–535, and for 1922 in Mineral Resources, 1924, Part II, pages 471–472.

The commission's grouping of the fields was made under the direction of C. E. Lesher and R. A. Walter, primarily with a view to its studies of cost of production. The fields are accurately delimited by metes and bounds on pages 2034–2052 of its report. Because all the fields adopted did not coincide with generally accepted trade districts they were designated by number rather than by name. For the convenience of the reader of Table 21, however, the trade name most nearly corresponding to the boundaries established by the commission is also listed.

TABLE 21.—*Bituminous coal produced and number of mines active in the several fields adopted by the United States Coal Commission, 1923 and 1925*

[The definitions of these fields are given in detail on pp. 2034–2052, Part IV, of the report of the U. S. Coal Commission]

Coal Commission field number	State	General name of field	1923		1925	
			Number of mines	Production (net tons)	Number of mines	Production (net tons)
1	Pennsylvania	Pittsburgh	452	42,209,000	274	25,121,000
2	do	Connellsville	312	37,882,000	211	35,010,000
3	do	Westmoreland-Ligonier	171	14,563,000	115	13,939,000
4a, b	do	Freeport (thick and thin)	123	12,338,000	89	8,089,000
5	do	Butler-Mercer	110	2,587,000	76	2,640,000
6	do	Blossburg	20	496,000	15	234,000
7	do	Broad Top	63	1,430,000	55	1,284,000
8	do	Somerset	232	5,772,000	167	6,730,000
9a	do	Central Pennsylvania, western	1,385	54,364,000	109	2,908,000
9b	do	Central Pennsylvania, middle			178	8,866,000
9c	do	Central Pennsylvania, eastern			685	32,107,000
10	Maryland-West Virginia.	Maryland-Potomac	159	3,890,000	125	4,305,000
11	West Virginia	Fairmont	309	22,883,000	192	19,433,000
12	Ohio-West Virginia.	Panhandle-Pittsburgh No. 8	233	25,529,000	186	21,697,000
13	do	Pomeroy	41	1,309,000	27	714,000
14	West Virginia	Putnam County	10	345,000	3	237,000
15	Kentucky-West Virginia.	Kenova	38	2,103,000	23	2,908,000
16	do	Thacker	89	6,149,000	67	7,965,000
17	West Virginia	Tug River	87	4,555,000	68	6,384,000
18	Virginia-West Virginia.	Pocahontas	107	16,481,000	96	19,904,000
19	West Virginia	Winding Gulf	78	7,228,000	71	9,316,000
20	do	New River	145	8,810,000	117	10,907,000
21	do	Kanawha	285	12,741,000	171	14,499,000
22	do	Coal River	29	1,397,000	24	2,036,000
23	do	Logan	155	12,831,000	113	19,255,000
24a	do	Coal and Coke	39	1,158,000	22	1,112,000
24b	do	Preston County	58	1,937,000	38	1,779,000
24c	do	Taylor County, Junior, Philippi, and Gauley.	176	6,140,000	119	5,347,000
25	Virginia	Southwestern Virginia	123	8,148,000	75	8,618,000
26	do	Clinch Valley	34	2,464,000	27	2,417,000
27	do	Upper New River	[1] 8	[1] 217,000	7	267,000
28	do	Richmond Basin	(1)	(1)		
29	Ohio	Massillon-Palmyra-Lisbon	90	2,815,000	82	1,695,000
30	do	Coshocton-Goshen	155	3,174,000	128	2,209,000
31	do	Cambridge	55	4,780,000	38	1,644,000
32	do	Crooksville	60	1,015,000	42	747,000
33	do	Hocking	241	7,517,000	142	4,875,000

[1] Upper New River field includes Richmond Basin field (No. 28).

TABLE 21.—*Bituminous coal produced and number of mines active in the several fields adopted by the United States Coal Commission, 1923 and 1925*—Con.

Coal Commission field number	State	General name of field	1923		1925	
			Number of mines	Production (net tons)	Number of mines	Production (net tons)
34	Ohio	Jackson and Ironton	89	610,000	45	395,000
36	Kentucky	Northeast Kentucky	225	9,602,000	166	14,061,000
37	do	Hazard	128	6,660,000	93	7,625,000
38	do	Harlan	75	8,752,000	71	11,440,000
39	Kentucky–Tennessee.	Southern Appalachian	221	6,765,000	140	6,573,000
40	do	Jellico	55	1,003,000	32	1,009,000
41	Kentucky	Western Kentucky	172	10,890,000	161	12,187,000
42	Tennessee	Rockwood–Soddy	89	2,563,000	47	2,122,000
43	do	Fentress	13	541,000	7	751,000
44	Alabama	Big Seam Group	45	5,954,000	46	6,022,000
45	Alabama–Georgia	Cahaba Group	109	5,846,000	102	5,800,000
46	Alabama	Pratt Group	137	8,696,000	92	8,248,000
47	Indiana	Indiana	272	25,793,000	187	21,068,000
48	do	Brazil Block	29	345,000	16	157,000
49	Illinois	Northern Illinois	60	2,334,000	45	1,753,000
50	do	Fulton–Peoria	119	4,190,000	120	3,510,000
51	do	Danville	32	4,178,000	29	3,424,000
52	do	Central Illinois	108	25,205,000	86	21,077,000
53	do	Belleville	106	10,193,000	78	6,153,000
54	do	Murphysboro	10	557,000	7	609,000
55	do	Southern Illinois	140	32,595,000	101	30,383,000
56	Michigan	Michigan	13	1,172,000	10	808,000
57	Arkansas	Sebastian	54	899,000	51	726,000
58	do	Excelsior–Logan	22	112,000	27	262,000
59	do	Arkansas (anthracite)	18	222,000	18	232,000
60	Colorado	Colorado domestic	145	4,430,000	143	4,681,000
61	do	Trinidad	44	3,182,000	42	2,986,000
62	do	Northern Colorado	47	2,715,000	44	2,644,000
63	Iowa	Marion–Monroe–Polk	89	4,485,000	134	3,762,000
64	do	Appanoose	62	1,217,000	73	953,000
65	Kansas	Pittsburg	192	4,135,000	202	4,297,000
66	do	Lightning Creek				
67	do	Osage	27	115,000	27	165,000
68	do	Leavenworth [2]	4	137,000	3	94,000
69	Missouri	Southern Missouri	[3] 79	[3] 2,114,000	76	1,714,000
70	do	Lafayette	69	1,141,000	76	948,000
71	do	Grundy	(2)	(2)	(2)	(2)
72	do	Platte	(2)	(2)	(2)	(2)
73	Montana	Montana	48	3,144,000	52	3,044,000
74	New Mexico	Gallup	13	939,000	[4] 15	[4] 972,000
75	do	Anthracite	11	248,000	12	243,000
76	do	Raton	15	1,678,000	11	1,342,000
76a	do	Monero	3	33,000	(4)	(4)
77	North Dakota	Southern North Dakota	72	910,000	93	832,000
78	do	Northern North Dakota	50	447,000	59	493,000
79	Oklahoma	McAlester Vein	25	640,000	21	360,000
80	do	Oklahoma, Eastern	90	2,200,000	79	1,966,000
81	Texas	Texas (bituminous)	10	175,000	7	182,000
82	do	Texas (lignite)	34	1,012,000	30	826,000
83	Utah	Utah	37	4,720,000	41	4,690,000
84	Washington	Kittitas County	12	1,358,000	10	871,000
85	do	Pierce–King (bituminous)	16	605,000	23	1,238,000
86	do	Lewis	28	963,000	23	429,000
87	Wyoming	Wyoming	62	7,559,000	61	6,553,000
88	South Dakota	South Dakota	15	10,000	17	14,000
89	Oregon	Oregon	(5)	(5)	(5)	(5)
90	California [5]	California [5]	5	20,000	5	13,000
91	Nevada	Nevada				
92	North Carolina	North Carolina	2	36,000	2	65,000
	Unclassified		12	120,000	9	83,000
			9,331	563,422,000	7,144	520,053,000

[2] Leavenworth field, Kansas, includes Platte field, Missouri (No. 72), in 1923, and Grundy and Platte fields, Missouri (Nos. 71 and 72), in 1925.
[3] Southern Missouri field includes Grundy field (No. 71) in 1923.
[4] Gallup field includes Monero field (No. 76a) in 1925.
[5] California includes Idaho and Oregon.

PRODUCTION, BY WEEKS AND MONTHS

The following tables form a summary of the statistics of the weekly and monthly production of anthracite and bituminous coal that are first published in the Bureau of Mines weekly coal reports. The figures given are estimates based upon daily and weekly reports of cars of coal and beehive coke loaded by the principal railroads and of shipments over the Monongahela, Allegheny, Ohio, and Kanawha Rivers. The estimates are afterwards revised to agree with the results of the annual statistical reports from the producers of coal, and therefore the figures here given differ slightly from the estimates originally issued in the weekly reports.

TABLE 22.—*Estimated weekly production of bituminous coal, 1923–1925*

1923		1924		1925	
Week ended—	Net tons	Week ended—	Net tons	Week ended—	Net tons
Jan. 6	11,379,000	Jan. 5	[1] 7,777,000	Jan. 3	[1] 4,610,000
13	11,611,000	12	12,348,000	10	12,520,000
20	11,308,000	19	12,002,000	17	11,977,000
27	11,371,000	26	11,961,000	24	11,523,000
Feb. 3	11,061,000	Feb. 2	11,726,000	31	11,011,000
10	11,102,000	9	11,901,000	Feb. 7	10,849,000
17	10,798,000	16	11,538,000	14	9,704,000
24	10,687,000	23	10,706,000	21	9,411,000
Mar. 3	11,330,000	Mar. 1	11,070,000	28	8,806,000
10	11,001,000	8	9,952,000	Mar. 7	9,332,000
17	10,795,000	15	9,951,000	14	8,593,000
24	10,791,000	22	9,581,000	21	8,237,000
31	10,797,000	29	9,130,000	28	8,306,000
Apr. 7	9,967,000	Apr. 5	7,047,000	Apr. 4	7,505,000
14	10,767,000	12	6,989,000	11	7,799,000
21	10,580,000	19	7,148,000	18	7,473,000
28	10,459,000	26	6,950,000	25	7,985,000
May 5	10,414,000	May 3	7,069,000	May 2	7,942,000
12	10,533,000	10	7,366,000	9	8,231,000
19	10,631,000	17	7,269,000	16	8,303,000
26	11,437,000	24	7,403,000	23	8,404,000
June 2	10,446,000	31	6,918,000	30	8,096,000
9	11,051,000	June 7	7,622,000	June 6	8,328,000
16	10,945,000	14	7,391,000	13	8,574,000
23	10,789,000	21	7,440,000	20	8,355,000
30	10,825,000	28	7,614,000	27	8,614,000
July 7	9,050,000	July 5	5,918,000	July 4	7,310,000
14	11,309,000	12	7,749,000	11	8,591,000
21	11,051,000	19	7,651,000	18	8,915,000
28	11,197,000	26	7,792,000	25	9,291,000
Aug. 4	10,936,000	Aug. 2	7,730,000	Aug. 1	9,404,000
11	10,197,000	9	8,043,000	8	9,915,000
18	11,224,000	16	8,174,000	15	10,204,000
25	11,783,000	23	8,589,000	22	10,463,000
Sept. 1	12,150,000	30	9,014,000	29	11,071,000
8	10,854,000	Sept. 6	8,215,000	Sept. 5	10,767,000
15	11,777,000	13	9,843,000	12	9,927,000
22	11,856,000	20	10,165,000	19	10,819,000
29	11,745,000	27	10,467,000	26	11,169,000
Oct. 6	11,075,000	Oct. 4	10,623,000	Oct. 3	10,947,000
13	11,338,000	11	10,913,000	10	11,616,000
20	11,070,000	18	10,608,000	17	11,704,000
27	11,303,000	25	10,654,000	24	12,021,000
Nov. 3	10,917,000	Nov. 1	10,414,000	31	12,415,000
10	11,103,000	8	9,703,000	Nov. 7	12,103,000
17	10,058,000	15	10,475,000	14	12,099,000
24	10,518,000	22	10,919,000	21	12,526,000
Dec. 1	9,256,000	29	9,893,000	28	11,534,000
8	10,174,000	Dec. 6	10,840,000	Dec. 5	12,796,000
15	10,285,000	13	10,882,000	12	12,836,000
22	10,914,000	20	10,823,000	19	12,613,000
29	6,949,000	27	7,546,000	26	8,384,000
Jan. 5	[1] 1,601,000	Jan. 3	[1] 6,175,000	Jan. 2	[1] 8,125,000
	564,565,000		483,637,000		520,053,000

[1] Figures represent that part of the output in the week which is included in the calendar year shown. The figures of total production for these weeks are as follows: Jan. 5, 1924, 9,378,000 tons; Jan. 3, 1925, 10,785,000 tons; Jan. 2, 1926, 10,704,000 tons.

TABLE 23.—*Number of working days and estimated average production of bituminous coal per working day in each week, 1924–25*

Week ended—	Number of working days	Average production (net tons)	Week ended—	Number of working days	Average production (net tons)
1924			1925		
Jan. 5	[1] 4.2	[2] 1,803,000	Jan. 3	[1] 2.3	[2] 2,035,000
12	6	2,058,000	10	6	2,087,000
19	6	2,000,000	17	6	1,996,000
26	6	1,994,000	24	6	1,921,000
Feb. 2	6	1,954,000	31	6	1,835,000
9	6	1,984,000	Feb. 7	6	1,808,000
16	6	1,923,000	14	6	1,617,000
23	5.8	1,846,000	21	6	1,569,000
Mar. 1	6	1,845,000	28	5.9	1,493,000
8	6	1,659,000	Mar. 7	6	1,555,000
15	6	1,659,000	14	6	1,432,000
22	6	1,597,000	21	6	1,373,000
29	6	1,522,000	28	6	1,384,000
Apr. 5	5.5	1,281,000	Apr. 4	5.6	1,340,000
12	6	1,165,000	11	6	1,300,000
19	6	1,191,000	18	6	1,246,000
26	6	1,158,000	25	6	1,331,000
May 3	6	1,178,000	May 2	6	1,324,000
10	6	1,228,000	9	6	1,372,000
17	6	1,212,000	16	6	1,384,000
24	6	1,234,000	23	6	1,401,000
31	5.4	1,281,000	30	5.4	1,499,000
June 7	6	1,270,000	June 6	6	1,388,000
14	6	1,232,000	13	6	1,429,000
21	6	1,240,000	20	6	1,393,000
28	6	1,269,000	27	6	1,436,000
July 5	5	1,184,000	July 4	5	1,462,000
12	6	1,292,000	11	6	1,432,000
19	6	1,275,000	18	6	1,486,000
26	6	1,299,000	25	6	1,549,000
Aug. 2	6	1,288,000	Aug. 1	6	1,567,000
9	6	1,341,000	8	6	1,653,000
16	6	1,362,000	15	6	1,701,000
23	6	1,432,000	22	6	1,744,000
30	6	1,502,000	29	6	1,845,000
Sept. 6	5.3	1,550,000	Sept. 5	6	1,795,000
13	6	1,641,000	12	5.4	1,838,000
20	6	1,694,000	19	6	1,803,000
27	6	1,745,000	26	6	1,862,000
Oct. 4	6	1,771,000	Oct. 3	6	1,825,000
11	6	1,819,000	10	6	1,936,000
18	6	1,768,000	17	6	1,951,000
25	6	1,776,000	24	6	2,004,000
Nov. 1	6	1,736,000	31	6	2,069,000
8	5.4	1,797,000	Nov. 7	5.7	2,123,000
15	5.6	1,871,000	14	5.7	2,123,000
22	6	1,820,000	21	6	2,088,000
29	5.2	1,914,000	28	5.3	2,176,000
Dec. 6	6	1,807,000	Dec. 5	6	2,133,000
13	6	1,814,000	12	6	2,139,000
20	6	1,804,000	19	6	2,102,000
27	5	1,509,000	26	5	1,677,000
Jan. 3	[1] 3	[2] 2,035,000	Jan. 2	[1] 4	[2] 2,020,000
	307.4	1,573,000		307.3	1,692,000

[1] Number of working days in this week that fell in the year.
[2] Average daily production for the entire week and not for the working days that fell in the year.

TABLE 24.—*Estimated weekly production of anthracite, 1924–25*

Week ended—	Production (net tons)	Number of working days	Average production per working day (net tons)	Week ended—	Production (net tons)	Number of working days	Average production per working day (net tons)
1924				1925			
Jan. 5	[1] 1,079,000	[1] 4	[2] 280,000	Jan. 3	[1] 348,000	[1] 2	[2] 244,000
12	1,793,000	6	299,000	10	1,741,000	6	290,000
19	1,836,000	6	306,000	17	1,759,000	6	293,000
26	1,737,000	6	290,000	24	1,698,000	6	283,000
Feb. 2	1,845,000	6	308,000	31	1,688,000	6	281,000
9	1,858,000	6	310,000	Feb. 7	1,862,000	6	310,000
16	1,852,000	6	309,000	14	1,780,000	6	297,000
23	1,613,000	6	269,000	21	1,794,000	6	299,000
Mar. 1	1,819,000	6	303,000	28	1,567,000	6	261,000
8	1,834,000	6	306,000	Mar. 7	1,615,000	6	269,000
15	1,892,000	6	315,000	14	1,616,000	6	269,000
22	1,758,000	6	293,000	21	1,476,000	6	246,000
29	1,893,000	6	316,000	28	1,600,000	6	267,000
Apr. 5	1,509,000	5	302,000	Apr. 4	1,446,000	5	289,000
12	1,809,000	6	302,000	11	1,681,000	6	280,000
19	1,582,000	6	264,000	18	1,529,000	6	255,000
26	1,174,000	6	196,000	25	1,890,000	6	315,000
May 3	1,575,000	6	263,000	May 2	1,936,000	6	323,000
10	1,875,000	6	313,000	9	1,987,000	6	331,000
17	1,850,000	6	308,000	16	1,950,000	6	325,000
24	1,803,000	6	301,000	23	1,708,000	6	285,000
31	1,261,000	5	252,000	30	1,681,000	5	336,000
June 7	1,799,000	6	300,000	June 6	1,634,000	6	272,000
14	1,777,000	6	296,000	13	1,825,000	6	304,000
21	1,777,000	6	296,000	20	1,745,000	6	291,000
28	1,869,000	6	312,000	27	1,800,000	6	300,000
July 5	1,263,000	5	253,000	July 4	1,478,000	5	296,000
12	1,823,000	6	304,000	11	1,809,000	6	302,000
19	1,793,000	6	299,000	18	1,936,000	6	323,000
26	1,790,000	6	298,000	25	1,999,000	6	333,000
Aug. 2	1,676,000	6	279,000	Aug. 1	2,036,000	6	339,000
9	1,622,000	6	270,000	8	2,011,000	6	335,000
16	1,351,000	6	225,000	15	1,858,000	6	310,000
23	1,668,000	6	278,000	22	2,155,000	6	359,000
30	1,790,000	6	298,000	29	2,263,000	6	377,000
Sept. 6	1,414,000	5	283,000	Sept. 5	434,000	5	87,000
13	1,774,000	6	296,000	12	5,000	6	800
20	1,804,000	6	301,000	19	9,000	6	1,500
27	1,893,000	6	316,000	26	13,000	6	2,200
Oct. 4	1,389,000	6	232,000	Oct. 3	14,000	6	2,300
11	1,693,000	6	282,000	10	13,000	6	2,200
18	1,706,000	6	284,000	17	17,000	6	2,800
25	1,878,000	6	313,000	24	13,000	6	2,200
Nov. 1	1,407,000	5	281,000	31	19,000	5	3,800
8	1,552,000	5	310,000	Nov. 7	28,000	6	4,700
15	1,632,000	5	326,000	14	33,000	5	6,600
22	1,781,000	6	297,000	21	46,000	6	7,700
29	1,570,000	5	314,000	28	36,000	5	7,200
Dec. 6	1,768,000	6	295,000	Dec. 5	63,000	6	10,500
13	1,727,000	6	288,000	12	64,000	6	10,700
20	1,820,000	6	303,000	19	56,000	6	9,300
27	1,003,000	5	201,000	26	33,000	5	6,600
Jan. 3	[1] 871,000	[1] 3	[2] 244,000	Jan. 2	[1] 20,000	[1] 4	[2] 5,600
	87,927,000	304	289,000		61,817,000	304	203,000

[1] Figures represent the output and the number of working days in that part of the week included in the calendar year shown. Figures of total production for these weeks are as follows: Jan. 5, 1924, 1,398,000 tons; Jan. 3, 1925, 1,219,000 tons; Jan. 2, 1926, 28,000 tons.

[2] Average daily production for the entire week and not for the working days that fell in the year.

If production in February, with 28 days, is compared to that in January, with 31 days, a downward drop is often seen, which may give a mistaken impression as to the real trend. A better indication is given by the average production per working day, and it is the practice of the Bureau of Mines in tables of monthly or weekly coal production to show the average per working day as well as the total for the period. Christmas and Fourth of July are universally observed at the mines. A number of other holidays are observed in some districts but not in others. New Year's Day is very generally observed but in 1925 enough mines continued at work on that day so that over the country as a whole the day counted for three-tenths of a normal working day. February 22, on the other hand, is little observed as a holiday, and in 1925 counted for nine-tenths of a working day. Table 25 shows the allowances made in the bureau's records for holidays at the bituminous mines in the last six years. These allowances are made in the light of the daily reports of cars of coal loaded, collected by the American Railway Association. Loadings on the holiday are compared with those on the corresponding day of the weeks immediately preceding and following and the degree of holiday observance computed accordingly.

TABLE 25.—*Holidays commonly recognized in the bituminous coal fields and the average fraction of a working day for the country as a whole that each holiday represented, 1920–1925*

	Per cent of full working day					
	1920	1921	1922	1923	1924	1925
January: New Year's Day	0.3	0.2	0.2	0.3	0.2	0.3
February: Washington's Birthday	(1)	(1)	(1)	.9	.8	.9
April: Eight-hour day (Apr. 1)	.3	.3	.3	.4	.5	.6
May: Memorial Day	.5	.2	.8	.3	.4	.4
July: Independence Day						
September: Labor Day	.3	.3	.3	.3	.3	.4
November:						
General election	.5				.4	
Armistice Day	.7	.5	.5	.4	.6	.7
Thanksgiving Day	.3	.3	.2	.1	.2	.3
December: Christmas						

[1] Data for weighting not available.

TABLE 26.—*Estimated monthly production of bituminous coal and average production per working day, in net tons, 1917–1925*

Month	1917		1918		1919	
	Total	Daily average	Total	Daily average	Total	Daily average
January	47,969,000	1,845,000	42,227,000	1,624,000	42,193,000	1,623,000
February	41,353,000	1,723,000	43,777,000	1,824,000	32,103,000	1,338,000
March	47,869,000	1,773,000	48,113,000	1,851,000	34,293,000	1,319,000
April	41,854,000	1,674,000	46,041,000	1,771,000	32,712,000	1,258,000
May	47,086,000	1,744,000	50,443,000	1,868,000	38,186,000	1,414,000
June	46,824,000	1,873,000	51,138,000	2,046,000	37,685,000	1,507,000
July	46,292,000	1,852,000	54,971,000	2,114,000	43,425,000	1,670,000
August	47,372,000	1,755,000	55,114,000	2,041,000	43,613,000	1,677,000
September	45,108,000	1,880,000	51,183,000	2,133,000	48,209,000	1,928,000
October	48,337,000	1,790,000	52,300,000	1,937,000	57,200,000	2,119,000
November	47,690,000	1,908,000	43,895,000	1,756,000	19,006,000	792,000
December	44,037,000	1,761,000	40,184,000	1,607,000	37,235,000	1,432,000
	551,791,000	1,797,000	579,386,000	1,881,000	465,860,000	1,512,000

Month	1920		1921		1922	
	Total	Daily average	Total	Daily average	Total	Daily average
January	49,748,000	1,913,000	41,148,000	1,646,000	38,930,000	1,545,000
February	41,055,000	1,711,000	31,524,000	1,314,000	42,425,000	1,768,000
March	47,850,000	1,772,000	31,054,000	1,150,000	51,936,000	1,924,000
April	38,764,000	1,491,000	28,154,000	1,083,000	16,335,000	672,000
May	39,841,000	1,532,000	34,057,000	1,362,000	21,005,000	784,000
June	46,095,000	1,773,000	34,635,000	1,332,000	23,096,000	888,000
July	45,988,000	1,769,000	31,047,000	1,242,000	17,602,000	704,000
August	49,974,000	1,922,000	35,291,000	1,307,000	26,755,000	991,000
September	50,241,000	2,010,000	35,870,000	1,380,000	42,463,000	1,678,000
October	53,278,000	2,049,000	44,687,000	1,719,000	46,733,000	1,797,000
November	52,576,000	2,103,000	36,805,000	1,472,000	46,900,000	1,899,000
December	53,257,000	2,048,000	31,650,000	1,217,000	48,088,000	1,924,000
	568,667,000	1,847,000	415,922,000	1,356,000	422,268,000	1,379,000

Month	1923		1924		1925	
	Total	Daily average	Total	Daily average	Total	Daily average
January	51,944,000	1,975,000	52,507,000	2,004,000	51,640,000	1,963,000
February	43,645,000	1,826,000	47,302,000	1,907,000	38,770,000	1,622,000
March	48,446,000	1,794,000	41,288,000	1,588,000	37,416,000	1,439,000
April	44,057,000	1,806,000	30,429,000	1,193,000	33,514,000	1,309,000
May	47,690,000	1,813,000	32,276,000	1,223,000	35,276,000	1,389,000
June	47,083,000	1,811,000	31,458,000	1,258,000	36,960,000	1,422,000
July	46,707,000	1,868,000	33,346,000	1,283,000	39,362,000	1,514,000
August	50,578,000	1,923,000	35,923,000	1,382,000	44,633,000	1,717,000
September	47,841,000	1,969,000	42,376,000	1,675,000	46,556,000	1,833,000
October	50,907,000	1,885,000	48,414,000	1,793,000	52,907,000	1,960,000
November	44,425,000	1,813,000	42,102,000	1,815,000	50,497,000	2,131,000
December	41,242,000	1,650,000	46,266,000	1,779,000	52,522,000	2,020,000
	564,565,000	1,845,000	483,687,000	1,573,000	520,053,000	1,692,000

TABLE 27.—*Estimated monthly production of bituminous coal, by States, in 1925, in net tons*

State	January	February	March	April	May	June	July
Alabama	1,906,000	1,512,000	1,435,000	1,364,000	1,406,000	1,436,000	1,553,000
Arkansas	149,000	93,000	73,000	63,000	68,000	70,000	92,000
Colorado	1,220,000	830,000	622,000	565,000	605,000	600,000	603,000
Illinois	8,340,000	5,157,000	4,949,000	3,755,000	3,966,000	3,908,000	4,431,000
Indiana	2,638,000	1,633,000	1,697,000	1,384,000	1,349,000	1,355,000	1,440,000
Iowa	612,000	392,000	362,000	278,000	293,000	292,000	303,000
Kansas	537,000	365,000	309,000	278,000	278,000	270,000	315,000
Kentucky:							
Eastern	3,625,000	2,902,000	2,677,000	2,833,000	3,345,000	3,501,000	3,710,000
Western	1,144,000	753,000	754,000	669,000	663,000	768,000	862,000
Maryland	251,000	203,000	185,000	162,000	167,000	179,000	224,000
Michigan	96,000	74,000	63,000	48,000	34,000	32,000	48,000
Missouri	321,000	207,000	182,000	162,000	160,000	162,000	187,000
Montana	376,000	215,000	214,000	153,000	156,000	158,000	176,000
New Mexico	296,000	206,000	190,000	169,000	184,000	183,000	173,000
North Dakota	157,000	105,000	104,000	70,000	65,000	69,000	68,000
Ohio	2,819,000	2,180,000	2,143,000	1,840,000	1,903,000	1,889,000	1,989,000
Oklahoma	303,000	175,000	157,000	139,000	144,000	147,000	171,000
Pennsylvania	13,336,000	11,294,000	10,963,000	9,514,000	9,280,000	9,748,000	9,995,000
Tennessee	497,000	444,000	393,000	375,000	373,000	388,000	437,000
Texas	105,000	74,000	63,000	66,000	69,000	75,000	82,000
Utah	582,000	308,000	294,000	282,000	257,000	291,000	306,000
Virginia	1,146,000	929,000	971,000	922,000	958,000	1,031,000	1,054,000
Washington	256,000	194,000	222,000	203,000	170,000	180,000	170,000
West Virginia	10,135,000	8,026,000	7,911,000	7,872,000	9,017,000	9,861,000	10,580,000
Wyoming	766,000	477,000	464,000	328,000	352,000	352,000	377,000
Other States	27,000	22,000	19,000	20,000	14,000	15,000	16,000
	51,640,000	38,770,000	37,416,000	33,514,000	35,276,000	36,960,000	39,362,000

State	August	September	October	November	December	Total
Alabama	1,762,000	1,827,000	1,937,000	1,868,000	1,998,000	20,004,000
Arkansas	105,000	113,000	129,000	133,000	132,000	1,220,000
Colorado	763,000	933,000	1,147,000	1,170,000	1,253,000	10,311,000
Illinois	5,431,000	5,518,000	7,048,000	6,745,000	7,661,000	66,909,000
Indiana	1,625,000	1,671,000	2,104,000	1,992,000	2,337,000	21,225,000
Iowa	370,000	372,000	480,000	466,000	495,000	4,715,000
Kansas	373,000	386,000	467,000	461,000	485,000	4,524,000
Kentucky:						
Eastern	4,039,000	4,104,000	4,231,000	3,835,000	4,080,000	42,882,000
Western	1,176,000	1,177,000	1,310,000	1,385,000	1,526,000	12,187,000
Maryland	245,000	251,000	259,000	274,000	295,000	2,695,000
Michigan	60,000	71,000	87,000	84,000	111,000	808,000
Missouri	217,000	228,000	288,000	282,000	298,000	2,694,000
Montana	243,000	274,000	396,000	381,000	302,000	3,044,000
New Mexico	194,000	208,000	251,000	244,000	259,000	2,557,000
North Dakota	80,000	110,000	185,000	182,000	130,000	1,325,000
Ohio	2,293,000	2,470,000	2,858,000	2,851,000	2,799,000	28,034,000
Oklahoma	197,000	192,000	226,000	239,000	236,000	2,326,000
Pennsylvania	11,084,000	11,818,000	13,497,000	12,879,000	13,520,000	136,928,000
Tennessee	486,000	507,000	520,000	500,000	534,000	5,454,000
Texas	95,000	95,000	96,000	90,000	98,000	1,008,000
Utah	413,000	498,000	533,000	467,000	459,000	4,690,000
Virginia	1,128,000	1,174,000	1,209,000	1,137,000	1,141,000	12,800,000
Washington	212,000	226,000	236,000	234,000	235,000	2,538,000
West Virginia	11,529,000	11,674,000	12,541,000	11,828,000	11,407,000	122,381,000
Wyoming	495,000	639,000	850,000	747,000	706,000	6,553,000
Other States	18,000	20,000	22,000	23,000	25,000	241,000
	44,633,000	46,556,000	52,907,000	50,497,000	52,522,000	520,053,000

TABLE 28.—*Estimated daily output of bituminous coal, by States, in each month of 1924 and 1925, in net tons*

1924

State	January	February	March	April	May	June	July
Alabama	73,600	69,600	63,000	51,100	50,000	50,800	51,200
Arkansas	6,800	5,400	4,400	2,300	3,600	3,200	3,800
Colorado	47,000	36,200	34,800	28,700	26,000	23,100	24,000
Illinois	350,200	290,100	217,200	143,100	140,200	146,200	156,700
Indiana	102,500	93,800	70,300	46,400	50,800	49,900	51,900
Iowa	27,900	24,200	18,200	12,500	11,700	12,100	13,000
Kansas	19,400	15,500	14,000	8,600	9,000	10,600	11,500
Kentucky:							
Eastern	121,400	125,200	106,200	90,900	98,400	99,300	104,000
Western	44,500	38,100	33,800	20,600	15,000	18,300	20,200
Maryland	8,700	8,100	7,700	5,500	5,300	5,800	5,500
Michigan	4,500	3,900	2,900	2,000	2,000	1,300	2,200
Missouri	13,000	10,400	9,200	4,600	4,800	5,400	6,000
Montana	16,000	11,800	9,000	6,900	5,600	4,800	5,600
New Mexico	11,200	9,000	8,700	8,000	7,500	7,700	7,800
North Dakota	6,600	4,800	3,700	2,700	2,300	2,000	2,200
Ohio	131,300	130,400	104,400	75,100	78,800	79,000	79,200
Oklahoma	11,300	8,600	7,800	4,700	4,900	5,600	6,600
Pennsylvania	535,100	549,800	470,700	352,000	355,100	356,900	339,000
Tennessee	18,600	18,300	17,200	10,900	10,200	10,300	11,200
Texas	4,300	3,700	3,200	2,900	3,200	3,200	3,400
Utah	20,200	12,700	11,300	12,000	10,300	10,800	13,600
Virginia	26,500	40,300	34,300	29,500	29,000	30,100	32,000
Washington	13,000	9,900	8,700	7,800	6,400	6,200	6,600
West Virginia	346,600	363,400	304,400	247,200	278,400	301,600	309,700
Wyoming	33,200	23,100	22,200	16,300	14,000	13,200	14,900
Other States	800	1,000	800	900	900	900	700
	2,004,000	1,907,000	1,588,000	1,193,000	1,223,000	1,258,000	1,283,000

State	August	September	October	November	December	Year
Alabama	55,700	66,900	71,400	73,800	70,700	62,200
Arkansas	3,400	6,000	6,000	5,400	6,200	4,700
Colorado	27,500	37,500	39,700	43,200	40,300	34,000
Illinois	181,900	248,400	258,100	255,400	281,600	222,300
Indiana	57,900	75,900	75,200	77,500	87,000	69,900
Iowa	13,500	18,600	19,800	20,000	22,100	17,800
Kansas	12,500	15,500	16,600	16,100	16,700	13,800
Kentucky:						
Eastern	111,800	132,600	142,100	150,000	130,700	117,500
Western	25,200	33,400	35,900	33,400	33,800	29,300
Maryland	6,000	6,900	7,200	8,200	8,600	6,900
Michigan	2,200	2,500	3,200	2,600	3,200	2,700
Missouri	6,600	8,700	9,300	9,100	9,800	8,100
Montana	6,700	9,200	11,300	13,300	13,300	9,500
New Mexico	8,500	9,600	10,100	10,500	10,100	9,100
North Dakota	2,300	3,400	4,700	6,300	5,900	3,900
Ohio	83,500	101,800	110,900	112,200	104,300	99,100
Oklahoma	7,000	8,700	8,900	8,300	8,500	7,600
Pennsylvania	354,700	420,500	452,400	454,300	463,200	425,000
Tennessee	12,600	15,500	17,200	17,900	18,200	14,800
Texas	4,100	4,400	4,500	4,100	3,700	3,700
Utah	14,300	15,300	17,500	18,400	18,900	14,600
Virginia	33,100	36,600	38,900	40,400	37,200	34,800
Washington	6,500	8,400	9,900	10,300	10,200	8,600
West Virginia	324,300	362,400	394,000	396,200	345,500	330,700
Wyoming	18,200	25,500	27,300	26,900	29,200	22,000
Other States	700	800	900	900	800	800
	1,382,000	1,675,000	1,793,000	1,815,000	1,779,000	1,573,000

TABLE 28.—*Estimated daily output of bituminous coal, by States, in each month of 1924 and 1925, in net tons*—Continued

1925

State	January	February	March	April	May	June	July
Alabama	72,500	63,300	55,200	53,300	55,400	55,200	59,700
Arkansas	5,700	3,900	2,800	2,500	2,700	2,700	3,500
Colorado	46,400	34,700	23,900	22,100	23,800	23,100	23,200
Illinois	317,100	215,800	190,300	146,700	156,100	150,300	170,400
Indiana	100,300	68,300	65,300	54,100	53,100	52,100	55,400
Iowa	23,200	16,400	13,900	10,900	11,500	11,200	11,600
Kansas	20,400	15,300	11,900	10,900	10,900	10,400	12,100
Kentucky:							
Eastern	137,800	121,400	102,900	110,700	131,700	134,700	142,700
Western	43,500	31,500	29,000	26,100	26,100	29,500	33,200
Maryland	9,500	8,500	7,100	6,300	6,600	6,900	8,600
Michigan	3,700	3,100	2,400	1,900	1,300	1,200	1,800
Missouri	12,200	8,700	7,000	6,300	6,300	6,200	7,200
Montana	14,300	9,000	8,200	6,000	6,100	6,100	6,800
New Mexico	11,300	8,600	7,300	6,600	7,200	7,000	6,600
North Dakota	5,900	4,400	4,000	2,700	2,600	2,700	2,600
Ohio	107,200	91,200	82,400	71,900	74,900	72,700	76,500
Oklahoma	11,500	7,300	6,000	5,400	5,700	5,700	6,600
Pennsylvania	507,100	472,500	421,700	371,600	365,300	374,900	384,400
Tennessee	18,900	18,600	15,100	14,600	14,700	14,900	16,800
Texas	4,000	3,100	2,400	2,600	2,700	2,900	3,200
Utah	22,100	12,900	11,300	11,000	10,100	11,200	11,800
Virginia	43,600	38,900	37,300	36,000	37,700	39,700	40,500
Washington	9,700	8,100	8,500	7,900	6,700	6,900	6,500
West Virginia	385,300	335,800	304,300	307,500	355,000	379,200	406,900
Wyoming	29,100	20,000	17,900	12,800	13,900	13,500	14,500
Other States	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	1,963,000	1,622,000	1,439,000	1,309,000	1,389,000	1,422,000	1,514,000

State	August	September	October	November	December	Year
Alabama	67,800	71,900	71,700	78,800	76,800	65,100
Arkansas	4,000	4,400	4,800	5,600	5,100	4,000
Colorado	29,300	36,700	42,500	49,300	48,200	33,500
Illinois	208,900	217,200	261,000	284,600	294,600	217,700
Indiana	62,500	65,800	77,900	84,000	89,900	69,000
Iowa	14,200	14,600	17,800	19,700	19,000	15,300
Kansas	14,300	15,200	17,300	19,400	18,600	14,700
Kentucky:						
Eastern	155,300	161,600	156,700	161,800	156,900	139,500
Western	45,200	46,300	48,500	58,400	58,600	39,600
Maryland	9,400	9,900	9,600	11,600	11,300	8,800
Michigan	2,300	2,800	3,200	3,500	4,300	2,600
Missouri	8,300	8,900	10,700	11,900	11,500	8,800
Montana	9,300	10,800	14,700	16,100	11,600	9,900
New Mexico	7,500	8,200	9,300	10,300	9,900	8,300
North Dakota	3,100	4,300	6,800	7,700	5,000	4,300
Ohio	88,200	97,200	105,900	120,300	107,700	91,200
Oklahoma	7,600	7,600	8,400	10,100	9,100	7,600
Pennsylvania	426,300	465,300	499,900	543,400	520,000	445,600
Tennessee	18,700	19,900	19,300	21,100	20,500	17,700
Texas	3,700	3,700	3,600	3,800	3,800	3,300
Utah	15,900	19,600	19,700	19,700	17,700	15,300
Virginia	43,400	46,200	44,800	48,800	43,900	41,600
Washington	8,200	8,900	8,700	9,900	9,000	8,200
West Virginia	443,400	459,600	464,500	499,100	438,700	398,200
Wyoming	19,000	25,200	31,500	31,500	27,200	21,300
Other States	1,000	1,000	1,000	1,000	1,000	1,000
	1,717,000	1,833,000	1,960,000	2,131,000	2,020,000	1,692,000

TABLE 29.—*Estimated monthly production of anthracite and average production per working day,[1] 1905–1925, in thousands of net tons*

Month	1905		1906		1907		1908		1909	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	5,575	223	6,985	269	6,697	258	7,235	278	6,781	271
February	4,961	207	6,031	251	5,821	242	5,799	232	5,986	249
March	6,650	246	7,419	275	6,679	257	6,137	236	8,284	307
April	6,675	279	625	26	7,547	302	7,710	308	7,707	308
May	7,594	292	4,165	160	7,646	294	7,840	314	6,625	265
June	7,390	284	7,264	279	7,624	305	7,346	283	6,417	247
July	5,750	230	6,375	255	7,231	278	5,848	225	5,260	202
August	6,376	236	6,911	256	7,392	274	5,922	228	5,492	211
September	6,427	268	5,795	241	7,032	293	6,710	258	5,777	231
October	6,583	253	6,891	265	7,792	299	7,697	296	7,299	292
November	6,856	274	6,632	265	7,327	293	7,520	313	7,886	315
December	6,823	273	6,189	247	6,816	273	7,505	289	7,556	291
	77,660	255	71,282	233	85,604	281	83,269	272	81,070	266

Month	1910		1911		1912		1913		1914	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	6,907	276	7,635	305	7,644	294	8,396	323	6,878	265
February	6,550	273	6,558	273	7,793	312	7,519	313	5,477	228
March	6,735	249	7,755	287	8,713	335	6,505	250	6,863	264
April	8,102	324	7,507	313	354	14	7,906	316	8,069	323
May	7,393	296	8,170	314	1,896	73	7,945	318	8,348	334
June	7,027	270	8,038	309	8,211	328	7,911	304	8,147	313
July	5,470	219	6,213	248	8,335	321	7,272	280	7,165	275
August	6,503	241	7,154	265	8,722	323	7,116	273	7,288	280
September	6,466	259	7,411	296	7,793	325	7,384	295	8,301	332
October	7,318	293	8,107	324	8,840	340	8,399	323	8,830	340
November	7,903	316	8,008	320	8,177	327	7,668	320	7,878	328
December	8,111	312	7,908	316	7,884	315	7,504	288	7,578	303
	84,485	277	90,464	298	84,362	276	91,525	300	90,822	298

Month	1915		1916		1917		1918		1919	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	6,337	253	7,649	306	7,672	295	7,270	280	7,819	301
February	5,703	238	7,404	296	6,688	279	7,494	312	5,102	213
March	6,654	246	7,964	295	9,026	334	9,382	361	5,190	200
April	8,725	349	5,887	245	7,222	301	8,211	328	6,884	275
May	7,807	312	7,212	277	8,933	343	8,880	342	7,525	289
June	7,157	275	7,327	282	9,103	350	8,855	354	7,404	296
July	6,691	257	7,062	282	8,684	347	9,134	351	7,974	307
August	7,161	275	7,190	266	9,058	335	9,258	343	8,096	311
September	7,423	309	7,206	288	8,230	343	8,038	335	7,494	300
October	8,761	337	7,630	305	9,183	353	8,105	312	8,645	333
November	8,514	341	7,790	312	8,453	338	6,803	272	7,870	342
December	8,062	310	7,257	290	7,360	294	7,396	296	8,089	311
	88,995	292	87,578	287	99,612	327	93,826	324	88,092	290

[1] Production up to 1923 was estimated from monthly shipments as reported by the Anthracite Bureau of Information, since 1923 from weekly car loadings as reported by the American Railway Association, and includes mine fuel, coal sold locally, dredge coal and the output of the Bernice Basin in Sullivan County. The average rates per working day for the years 1913–1918 are here revised slightly over those formerly published, to take account of later information as to the holidays observed in the anthracite region. In computing these average rates per working day New Years, eight-hour day (Apr. 1), Memorial Day, Independence Day, Labor Day, Mitchell day (Oct. 29), Thanksgiving, Christmas Day, and, since the war, armistice day, have been counted as holidays. No allowance, however, has been made for church holy days which are observed by many of the miners.

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TABLE 29.—*Estimated monthly production of anthracite and average production per working day, 1905–1925, in thousands of net tons*—Continued

Month	1920		1921		1922		1923		1924		1925	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	7,459	287	7,681	307	6,566	263	8,521	328	7,724	297	7,234	278
February	6,415	267	7,983	333	7,096	296	7,602	317	7,428	297	7,003	292
March	7,935	294	7,677	284	9,181	340	9,175	340	7,908	304	6,886	265
April	6,285	251	7,985	319	27	1	7,885	329	6,639	265	7,292	292
May	8,037	321	7,752	310	36	1	8,384	322	7,549	290	7,938	318
June	8,251	317	8,071	310	83	3	8,474	326	7,509	300	7,616	293
July	8,342	321	7,309	292	118	5	8,136	325	7,584	292	8,334	321
August	8,105	312	7,459	276	164	6	8,672	321	6,906	266	9,014	347
September	4,691	188	7,385	295	5,075	203	2,853	119	7,408	296	52	2
October	8,148	326	7,858	314	8,896	356	8,532	328	7,479	288	69	3
November	7,527	314	7,110	296	8,695	362	7,575	316	6,604	287	153	7
December	8,403	323	6,203	239	8,743	350	7,530	301	7,189	277	226	9
	89,598	295	90,473	298	54,683	180	93,339	307	87,927	288	61,817	203

MEN EMPLOYED

METHOD OF COLLECTING EMPLOYMENT STATISTICS

The statistics of number of men employed presented in this report are based on the replies of operators in 1925 to the following questions:

Average number of men employed during year:
- Underground—
  - Miners (hand or machine), loaders, shotfirers, and all others working at the "face"
  - Haulage and track employees
  - All other underground workers
- Surface (excluding coke and office workers)

Total number employed

For the mine operator to determine accurately "the average number of men employed" is not always easy. The ideal method, where the records available permit, would be to ascertain the total number of shifts or man days of labor during the year and divide this number by the number of days the mine worked. Now, the number of man days of day workers—that is, men paid by the day—can be ascertained from the mine pay roll, but to get the man days of the tonnage workers—the men paid by the piece—would require special records, which are maintained by few bituminous operators at the present time. At most bituminous mines no record is kept of the hours spent underground by the tonnage men, and the only evidence that a pick miner or loader had worked at all on a given day would be the presence of his check number on the weigh sheet, or possibly an entry in the foreman's attendance book. The lack of such a statement of the time worked by tonnage men is a serious handicap to the collection of accurate statistics of earnings, accident rates, volume of employment, attendance, and the productivity of labor and efficiency of management. That the difficulties in the way of keeping such a record are not insuperable is shown from the fact that it is

made a regular part of the system of determining costs, owners' profits, and miners' wage rates now in effect in the coal-mining industry of Great Britain. The installation of such a record, developed on a plan that can be applied under American conditions of mining, is urged upon both employers and employees. Until it can be provided, measurements of all factors that involve the amount of labor expended will remain crude and subject to serious error.

In the absence of information on the number of man shifts worked, many operators calculate the average number employed by averaging the numbers on the several pay rolls during the year. This method involves double counting to the extent that the same employees appear on the pay rolls of two or more mines in the same pay period—that is, duplication is introduced in proportion to the rapidity of labor turnover. Important as turnover may be in studies of labor relations and labor efficiency, it does not appear that the duplication introduced by it seriously impairs the value of the figures showing numbers employed. At a mine that works steadily during the year the average of the 24 semimonthly pay rolls will give a fairly accurate measure of the number employed. Where this method is used, pay-roll periods should not be included in which, because of a strike that lasts throughout the pay period or because of idleness through lack of market, the number of men drawing pay is only a small fraction of the normal working force. To include such a pay-roll period would artificially cut down the average number of men dependent for employment upon the mine, and it is clear from the returns that operators do not include such periods in calculating the average.

Many of the smaller operators do not even average the pay rolls for the year but rather set down the number of employees shown by the last pay roll.

Careful study of the returns under diverse conditions indicate the figures reported do not represent the average number of men actually at work at any one moment, nor the aggregate number of men who have worked at the mine during the year, nor the precise average number of men on the pay rolls, but rather the number of men commonly dependent on the mines for employment. They represent the number ordinarily reporting for work when the mine starts, plus the absentees—the men who have been working recently and will work again but who for one reason or another are not on hand that day. The totals for districts and for the United States are, therefore, a fair measure of the total number of coal-mine workers. These statistics are not accurate in all details, but they are comparable from year to year for each unit of the industry and represent the most accurate returns obtainable under present conditions, both as to the records generally available in mine offices and as to the funds allotted to the Bureau of Mines for collecting data.

The number employed at bituminous coal mines reached a maximum in 1923 when 704,793 men were reported. In 1924 there was a reduction of 85,000 men and in 1925 a further reduction of 31,000, the total number reported in 1925 being 588,493. Moreover, this figure of 588,493 includes the working force at mines that operated only a small part of the year. Mines continued to close as they had done in 1924, and the number of men at work at the end of 1925 was correspondingly reduced.

CLASSIFICATION OF MINE EMPLOYEES

The employees engaged in coal mining fall into two groups. One group includes those who are directly engaged in winning the coal and who are paid by the piece at so much a ton. They are known collectively as "tonnage men," or often as "contract men," because each pieceworker in a sense is a contractor, obligating himself to get out coal and maintain his working place at a fixed rate of compensation. The tonnage men work underground.

The men in the other group are known collectively as "daymen," or sometimes as "company men." They are paid by the day. Their duties are concerned with the maintenance of the mine, with construction and repair work, with the operation of haulage and ventilation systems and the pumps, hoists, and power house, and with the work at the tipple, where the coal is dumped from mine car to railroad car and often cleaned, picked, or sized. The daymen are classified as "inside" and "outside" men, according to whether they work underground or on the surface.

In the anthracite region the terms "company men" and "contract men" are commonly applied to the two groups, and in the bituminous fields, though usage varies widely, the terms "tonnage men" and "daymen" are perhaps most frequently used.

There are exceptions to the statement that the men engaged directly in winning the coal are pieceworkers and that all others are paid according to time, for piece rates are sometimes applied to other tasks, and again men may be placed on the day roll while engaged in mining a bit of difficult coal where their tonnage rate would not yield a living wage. Broadly, however, the distinction holds.

TONNAGE AND DAYMEN, INSIDE AND OUTSIDE

Up to the present it has not been possible to collect complete statistics for the country of the numbers in each occupation at the mines, partly because of the great diversity in occupational classification from field to field, and partly because of the expense involved. Indeed, up to 1916 the only statistics of men employed collected by the United States Geological Survey were the total number. In 1916 a division was made for the first time between underground and surface workers, and it was not until 1920 that the underground workers were further subdivided into tonnage men and daymen. Thanks to the zeal of W. W. Adams, accident statistician of the Bureau of Mines, the division into underground and surface workers has been carried back to 1911, partly by reference to State reports and to returns received by the bureau and partly by estimate. (Table 31.)

To get approximate figures of the number of tonnage men, the Bureau of Mines asks operators to report the number of "miners, hand or machine, loaders, and shot firers." This grouping would include pick miners, loaders after machines, and operators of the cutting machines themselves, also the small group of shot firers who are commonly paid by the piece and who perform, in the districts where they are employed, a task that elsewhere is a part of the work of the miner himself. The figures for the group go back to 1920.

The other men underground are virtually all daymen, and from 1920 to 1924 no subdivision of this group of "all other workers underground" is possible. The outside men are, with rare exceptions, all time-workers, though some are paid by the month rather than by the day.

In 1925 operators were asked to separate the inside daymen into "haulage and track employees" and "all others." The results are given in Table 32. It was found that about half the inside daymen in the bituminous mines and about two-fifths of those in the anthracite mines were engaged in haulage and track work. In the bituminous mines the tonnage men constituted 62.5 per cent of the total employed, the haulage and track men 11.6 per cent, other underground men 12 per cent, and outside men 13.9 per cent. In the anthracite mines the proportion of tonnage men is much less, the proportion of haulage and track men about the same, and the proportion of other inside men and of outside men much greater.

Those who seek more detailed records by occupations will find them in certain of the statements in mine inspectors' reports, in studies of the United States Coal Commission, and in the periodic investigations of wages and hours worked by the Federal Bureau of Labor Statistics. Unfortunately all these records are incomplete—either, as in the statements of the mine inspectors, because they cover only part of the country, or because they relate to only a sample list of mines.

TABLE 30.—*Comparative number of employees in bituminous coal mines, 1922–1925*

State	Average number employed				Per cent of increase or decrease		
	1922	1923	1924	1925	1922 to 1925	1923 to 1925	1924 to 1925
Alabama	28,169	30,035	27,956	27,097	−3.8	−9.8	−3.1
Arkansas	4,035	3,754	3,350	3,638	−9.8	−3.1	+8.6
Colorado	13,506	13,340	12,954	13,203	−2.2	−1.0	+1.9
Illinois	96,336	99,714	89,363	77,823	−19.2	−22.5	−12.9
Indiana	33,208	35,408	27,558	22,732	−31.6	−35.8	−17.5
Iowa	12,857	11,448	12,101	10,167	−20.9	−11.2	−16.0
Kansas	[1]7,359	9,761	8,561	7,800	+6.0	−4.2	−.9
Kentucky	60,924	60,811	55,766	57,024	−6.4	−6.2	+2.3
Maryland	3,755	3,725	3,776	3,580	−4.7	−3.9	−5.2
Michigan	2,166	1,977	1,551	1,579	−27.1	−20.1	+1.8
Missouri	8,750	6,952	5,977	5,114	−41.5	−26.4	−14.4
Montana	3,635	3,511	3,196	2,680	−26.3	−23.6	−16.1
New Mexico	4,001	4,095	4,206	3,444	−13.9	−15.9	−18.1
North Dakota	1,648	1,621	1,298	1,307	−20.7	−19.3	+.7
Ohio	54,194	54,555	44,229	39,658	−26.8	−27.3	−10.3
Oklahoma	7,828	7,130	6,144	5,631	−28.1	−21.0	−8.3
Pennsylvania, bituminous	188,838	194,981	169,322	156,798	−17.0	−19.6	−7.4
Tennessee	11,449	11,244	9,365	8,314	−27.4	−26.0	−11.2
Texas	2,841	2,452	2,195	2,108	−25.8	−14.0	−4.0
Utah	4,721	4,381	4,330	4,441	−5.9	+1.4	+2.6
Virginia	13,399	14,120	12,679	13,677	+2.1	−3.1	+7.9
Washington	4,481	4,306	3,858	3,726	−16.8	−13.5	−3.4
West Virginia	110,014	117,300	102,203	110,189	+.2	−6.0	+7.8
Wyoming	9,045	7,529	7,113	6,238	−31.0	−17.2	−12.3
Other States[2]	799	643	553	525	−34.3	−18.3	−5.1
Total bituminous	687,958	704,793	619,604	588,493	−14.4	−16.5	−5.0
Pennsylvania anthracite	156,849	157,743	160,009	160,312	+2.2	+1.6	+.2
Grand total	844,807	862,536	779,613	748,805	−11.4	−13.2	−4.1

[1] Figures for Kansas in 1922 are probably incomplete. In comparison with 1919, when 9,926 men were employed, the year 1925 shows a decrease of 21.4 per cent.

[2] Includes Alaska, California, Georgia, Idaho, Nebraska (1924), North Carolina, Oregon, and South Dakota.

TABLE 31.—*Men employed underground and on the surface in coal mines, 1916–1925*

Year	Underground						Surface		Total number
	Miners, loaders, and shot firers		All others [1]		Total underground		Number	Per cent	
	Number	Per cent	Number	Per cent	Number	Per cent			
Anthracite:									
1916	(2)	(2)	(2)	(2)	116,705	73.0	43,164	27.0	159,869
1917	(2)	(2)	(2)	(2)	109,989	71.3	44,185	28.7	154,174
1918	(2)	(2)	(2)	(2)	101,671	69.1	45,450	30.9	147,121
1919	(2)	(2)	(2)	(2)	107,829	69.8	46,742	30.2	154,571
1920	63,339	43.6	37,684	26.1	101,023	69.7	44,051	30.3	145,074
1921	73,977	46.4	42,840	26.8	116,817	73.2	42,682	26.8	159,499
1922	72,527	46.2	41,752	26.6	114,279	72.8	42,570	27.2	156,849
1923	72,362	45.9	42,359	26.8	114,721	72.7	43,022	27.3	157,743
1924	76,035	47.5	43,328	27.1	119,363	74.6	40,646	25.4	160,009
1925	78,773	49.1	41,795	26.1	120,568	75.2	39,744	24.8	160,312
Bituminous:									
1916	(2)	(2)	(2)	(2)	474,244	84.5	86,858	15.5	561,102
1917	(2)	(2)	(2)	(2)	498,185	82.6	104,958	17.4	603,143
1918	(2)	(2)	(2)	(2)	496,252	80.7	119,053	19.3	615,305
1919	(2)	(2)	(2)	(2)	508,801	81.8	113,197	18.2	621,998
1920	355,660	55.5	174,152	27.3	529,812	82.8	109,735	17.2	639,547
1921	399,270	60.1	168,019	25.4	567,289	85.5	96,465	14.5	663,754
1922	407,772	59.3	174,637	25.3	582,409	84.6	105,549	15.4	687,958
1923	422,040	59.9	178,265	25.3	600,305	85.2	104,488	14.8	704,793
1924	380,324	61.4	151,580	24.4	531,904	85.8	87,700	14.2	619,604
1925	367,456	62.5	139,085	23.6	506,541	86.1	81,952	13.9	588,493

[1] Includes haulage and track men. [2] No data.

TABLE 32.—*Men employed in coal mines, by States, in 1925*

State	Underground						Surface		Total number
	Miners, loaders, and shot firers		Haulage and track		All others		Number	Per cent	
	Number	Per cent	Number	Per cent	Number	Per cent			
Alabama	15,596	57.6	3,251	12.0	3,792	14.0	4,458	16.4	27,097
Alaska	55	35.0	10	6.4	26	16.6	66	42.0	157
Arkansas	2,088	57.4	373	10.2	388	10.7	789	21.7	3,638
California, Idaho, and Oregon	21	50.0	3	7.1	5	11.9	13	31.0	42
Colorado	8,472	64.2	1,453	11.0	1,269	9.6	2,009	15.2	13,203
Georgia	37	27.0	11	8.0	19	13.9	70	51.1	137
Illinois	53,242	68.4	8,534	11.0	8,568	11.0	7,479	9.6	77,823
Indiana	14,412	63.4	2,928	12.9	2,031	8.9	3,361	14.8	22,732
Iowa	7,302	71.8	933	9.2	1,102	10.8	830	8.2	10,167
Kansas	5,462	70.0	558	7.2	592	7.6	1,188	15.2	7,800
Kentucky	33,216	58.2	7,361	12.9	7,462	13.1	8,985	15.8	57,024
Maryland	2,406	67.2	455	12.7	266	7.4	453	12.7	3,580
Michigan	1,028	65.1	280	17.7	132	8.4	139	8.8	1,579
Missouri	2,994	58.5	300	5.9	607	11.9	1,213	23.7	5,114
Montana	1,576	58.9	293	10.9	360	13.4	451	16.8	2,680
New Mexico	2,248	65.3	416	12.1	322	9.3	458	13.3	3,444
North Carolina	65	46.4	28	20.0	19	13.6	28	20.0	140
North Dakota	718	54.9	74	5.7	76	5.8	439	33.6	1,307
Ohio	27,544	69.5	3,347	8.4	3,935	9.9	4,832	12.2	39,658
Oklahoma	3,078	54.7	853	15.1	677	12.0	1,023	18.2	5,631
Pennsylvania, bituminous	103,698	66.1	14,697	9.4	19,067	12.2	19,336	12.3	156,798
South Dakota	49	100.0							49
Tennessee	5,171	62.2	1,059	12.7	825	9.9	1,259	15.2	8,314
Texas	1,406	66.7	194	9.2	193	9.2	315	14.9	2,108
Utah	2,570	57.9	585	13.2	451	10.1	835	18.8	4,441
Virginia	6,686	48.9	2,135	15.6	2,442	17.9	2,414	17.6	13,677
Washington	2,059	55.3	379	10.2	537	14.4	751	20.1	3,726
West Virginia	60,323	54.8	17,240	15.6	14,795	13.4	17,831	16.2	110,189
Wyoming	3,934	63.1	776	12.4	601	9.6	927	14.9	6,238
Total bituminous	367,456	62.5	68,526	11.6	70,559	12.0	81,952	13.9	588,493
Pennsylvania anthracite	78,773	49.1	17,000	10.6	24,795	15.5	39,744	24.8	160,312
Grand total	446,229	59.6	85,526	11.4	95,354	12.7	121,696	16.3	748,805

DAYS WORKED BY MINES

TABLE 33.—*Average number of days worked by coal mines, by States, 1916–1925*

State	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
abama	262	273	278	239	247	166	215	232	220	246
aska	179	(1)	254	280	240	244	147	220	287	243
kansas	184	187	204	136	176	112	81	97	134	112
lifornia [1]	188	173	240	59	181	149	250	206	156	174
lorado	233	263	255	225	255	164	191	174	178	192
orgia	280	269	258	284	294	183	242	231	248	220
nois	198	243	238	160	213	152	120	158	148	161
liana	187	221	227	148	192	128	110	136	136	159
wa	202	251	245	176	250	148	131	181	161	153
nsas	204	216	234	182	204	137	125	139	151	169
ntucky	208	214	230	189	182	152	140	152	174	206
aryland	256	254	261	179	207	120	101	178	173	209
ichigan	216	254	237	179	261	196	162	222	178	186
issouri	207	240	235	175	233	166	113	155	135	166
ontana	244	268	264	194	250	143	140	179	173	171
w Mexico	292	321	301	273	302	150	216	216	204	202
rth Carolina			40	100	288	300	167	275	287	272
rth Dakota	244	255	229	216	218	194	175	182	165	153
io	197	210	223	164	188	134	100	150	143	151
lahoma	178	211	228	184	217	141	114	133	124	153
egon	236	251	292	259	307	(1)	(1)	(1)	(1)	(1)
nnsylvania, bituminous	259	261	269	218	244	151	154	213	180	200
uth Dakota	145	154	145	164	133	129	138	122	138	143
nnessee	239	241	265	201	234	154	163	183	159	211
xas	218	263	262	227	242	139	185	178	166	150
ah	228	219	258	239	252	151	204	160	182	179
rginia	272	273	277	247	262	166	198	212	226	254
shington	217	271	275	217	260	159	194	213	202	193
st Virginia	237	225	238	200	198	149	143	169	182	225
yoming	248	246	268	221	264	167	128	192	176	178
Total bituminous	230	243	249	195	220	149	142	179	171	195
nnsylvania anthracite	253	285	293	266	271	271	151	268	274	182
Grand total	235	251	258	209	230	173	144	195	192	192

[1] California includes Idaho, 1916–1920; Idaho and Oregon, 1921–1923; Idaho, Nebraska, and Oregon in 24; and Idaho and Oregon in 1925. The number of days was not reported for Alaska in 1917.

TABLE 34.—*Days worked and lost at bituminous coal mines, 1880, 1920, 1923, 1924, and 1925*

	1880 [1]	1920	1923	1924	1925
ays worked	233	220	179	171	195
Days lost, total	75	88	129	137	113
ays lost account strikes	21	6	2	7	2
ays lost, other causes	54	82	127	130	111
Total days	308	308	308	308	308

[1] From data in Tenth Census, vol. 15, Mining Industries, p. 683. As originally published the data ere expressed as per cent of the working year.

LENGTH OF WORKING DAY

ESTABLISHED WORKING DAY

In discussing the length of the working day in the coal mines of the United States it is necessary to distinguish between the established working day and the time actually spent at work by the men.

The established working day is now generally 8 hours. When market and other conditions permit, the mines work 6 days a week and the established working week is 48 hours. Table 35 classifies the bituminous mines according to the length of the established day. In 1925, out of 588,493 men, 541,822 were employed in mines where the established day was 8 hours.

In the unionized bituminous mines the 8-hour day has been in effect since 1898; in the unionized anthracite mines it was not introduced until 1916 and was not extended to certain minor occupations until 1923. Now, however, the basic 8-hour day is the rule for underground occupations in all the unionized mines, anthracite as well as bituminous.

The nonunion mines of the bituminous fields also have generally adopted the 8-hour day. A statistical record tracing the progress of the 8-hour day in the bituminous mines and the extent to which it is now in effect is given in Table 36. It will be seen that in 1917 and 1918 there was rapid progress in the extension of the 8-hour day, and that since then more than 90 per cent of the men have been employed in 8-hour mines. There has, however, been a slight increase in the proportion in 9 and 10 hour mines in the last four years. The weighted average established working day for all the mines in 1925 was 8.08 hours.

TABLE 35.—*Number of bituminous coal mines having established working days of certain length and number of men employed in 1924 and 1925*

State	8 hours		9 hours		10 hours		All others and not reporting [1]		Total	
	Mines	Men	Mines	Men	Mines	Men	Mines	Men	Mines	Men
1924										
Alabama	112	[2] 9,209	83	14,390	28	4,017	15	340	238	27,956
Alaska	6	163					2	4	8	167
Arkansas	79	3,107	2	62	2	120	3	61	86	3,350
California, Idaho, Nebraska, and Oregon	4	60					5	23	9	83
Colorado	159	[2] 12,434	3	290			69	230	231	12,954
Georgia	2	143							2	143
Illinois	396	88,950	2	13			90	400	488	89,363
Indiana	213	27,347	2	42			33	169	248	27,558
Iowa	179	11,617	1	6			76	478	256	12,101
Kansas	174	8,297					54	264	228	8,561
Kentucky	543	[2] 49,022	50	5,372	21	963	46	409	660	55,766
Maryland	74	3,599	1	27			18	150	93	3,776
Michigan	9	1,551							9	1,551
Missouri	111	[2] 5,802	2	97	1	10	13	68	127	5,977
Montana	33	3,006			1	38	34	152	68	3,196
New Mexico	35	[2] 4,185					7	21	42	4,206
North Carolina	2	120							2	120
North Dakota	48	848	2	23	6	142	76	285	132	1,298
Ohio	572	43,010	12	131	8	522	158	566	750	44,229
Oklahoma	84	5,804	4	212	2	87	4	41	94	6,144
Pennsylvania	1,862	[2] 163,162	78	4,836	11	404	171	920	2,122	169,322
South Dakota							16	40	16	40
Tennessee	133	8,860	2	465			4	40	139	9,365
Texas	26	1,073	8	421	2	39	8	662	44	2,195

[1] Includes employees in mines where the established working day was changed during the year, or where the working day was irregular, or which failed to answer inquiry.

[2] Includes outside employees working 9 hours or 10 hours a day at certain mines where the established time for underground workers is 8 hours.

TABLE 35.—*Number of bituminous coal mines having established working days of certain length and number of men employed in 1924 and 1925*—Continued

State	8 hours		9 hours		10 hours		All others and not reporting		Total	
	Mines	Men	Mines	Men	Mines	Men	Mines	Men	Mines	Men
1924										
Utah	37	4,318					2	12	39	4,330
Virginia	105	[2] 12,431	3	121	3	113	4	14	115	12,679
Washington	55	3,841					3	17	58	3,858
West Virginia	1,136	95,996	37	4,734	13	995	34	478	1,220	102,203
Wyoming	61	[2] 7,073					1	40	62	7,113
	6,250	575,028	292	31,242	98	7,450	946	5,884	7,586	619,604
1925										
Alabama	78	7,230	71	13,511	29	3,458	61	2,898	239	27,097
Alaska	6	140					3	17	9	157
Arkansas	81	3,274	1	50	4	261	10	53	96	3,638
California, Idaho, and Oregon	4	38	1	4					5	42
Colorado	155	[2] 12,808	3	180			71	215	229	13,203
Georgia	1	137							1	137
Illinois	371	77,132	1	5			94	686	466	77,823
Indiana	177	22,588	2	28			24	116	203	22,732
Iowa	154	9,946					53	221	207	10,167
Kansas	135	[2] 7,088	1	8			94	704	230	7,800
Kentucky	576	[2] 51,682	32	4,289	16	798	17	155	641	57,024
Maryland	71	3,508	1	26			16	46	88	3,580
Michigan	10	1,579							10	1,579
Missouri	100	4,480	5	124	1	17	48	493	154	5,114
Montana	32	2,541			1	69	19	70	52	2,680
New Mexico	28	[2] 3,272					10	172	38	3,444
North Carolina	2	140							2	140
North Dakota	56	870			7	136	89	301	152	1,307
Ohio	462	38,225	9	290	7	393	161	750	639	39,658
Oklahoma	90	5,198	4	272	3	146	3	15	100	5,631
Pennsylvania	1,759	[2] 151,764	67	4,103	6	114	142	817	1,974	156,798
South Dakota							17	49	17	49
Tennessee	102	7,417	2	262	1	248	6	387	111	8,314
Texas	15	839	13	501	1	222	8	546	37	2,108
Utah	41	4,441							41	4,441
Virginia	106	13,431	4	225	1	10	2	11	113	13,677
Washington	52	3,704					4	22	56	3,726
West Virginia	1,088	[2] 102,134	51	7,485	13	423	21	147	1,173	110,189
Wyoming	55	6,216	1	2			5	20	61	6,238
	5,807	541,822	269	31,465	90	6,295	978	8,911	7,144	588,493

[2] Includes outside employees working 9 hours or 10 hours a day at certain mines where the established time for underground workers is 8 hours.

TABLE 36.—*Percentage of men employed in bituminous coal mines that had established working days of 8, 9, and 10 hours, 1905–1925* [1]

Year	Per cent of total employees in—			Weighted average working day (hours)	Year	Per cent of total employees in—			Weighted average working day (hours)
	8-hour mines	9-hour mines	10-hour mines			8-hour mines	9-hour mines	10-hour mines	
1905	61.1	13.6	25.3	8.6	1916	58.6	17.4	24.0	8.6
1906	63.0	13.5	23.5	8.6	1917	79.0	12.6	8.4	8.3
1907	64.0	11.6	24.4	8.6	1918	90.6	6.7	2.7	8.12
1908	63.5	11.1	25.4	8.6	1919	95.5	3.5	1.0	8.06
1910	62.1	11.3	26.6	8.6	1920	97.1	2.0	.9	8.04
1911	62.9	10.9	26.2	8.6	1921	96.6	2.9	.5	8.04
1912	61.6	11.5	26.9	8.6	1922	95.1	4.0	.9	8.06
1913	61.9	15.2	22.9	8.6	1923	94.7	4.2	1.1	8.06
1914	60.7	15.4	23.9	8.6	1924	93.7	5.1	1.2	8.08
1915	59.6	17.0	23.4	8.6	1925	93.5	5.4	1.1	8.08

[1] Percentages are calculated on base of total number of men in mines definitely reported as having 8, 9, or 10 hour day. A small number of mines that work more than 10 hours or less than 8 hours have been excluded, as have also all mines for which the reports were defective or which changed their working day during the year.

AVERAGE TIME SPENT UNDERGROUND

The established working day, however, does not of itself measure the length of time the men actually work, because the mine may shut down before the full day is out, because the miner may go home before the mine stops, and because of the time spent by the man in going to and from his place of work underground. Allowing for these other factors, how much time does the man actually spend at work and how long is he underground?

As interpreted in the union wage agreements, the 8-hour day means 8 hours of labor at the usual working place, exclusive of time for lunch and exclusive of time spent in going from the entrance of the mine to the working place and back again. In general, this provision applies both to pieceworkers and day-wage workers underground, though certain classes of daymen have duties to be performed outside the eight hours. Motormen and drivers are ordinarily required to take motors and mules on their own time to and from the stables and the parting or station where they begin hauling, and this time is not counted as part of the day's labor.

Although the wage agreements specify eight hours of labor, it does not follow that men are always at work eight hours in the day. Shortage of railroad cars at the tipple, lack of orders, a petty strike, or a breakdown within the mine may cause the mine to stop before the eight hours are over. Time workers may lose fractional days through sickness or accident. In particular, the tonnage men who constitute 40 to 70 per cent of the working force may leave early before the mine work as a whole stops, because the custom of the industry allows them that freedom. Only in the rarest instances is a record kept of the time these men are in the mine. Sometimes they leave because they have finished their allotted work for the day, sometimes because they feel sick, or have other interests to attend to, or sometimes simply because they have earned enough for one day. The amount and the causes of this early quitting have been a subject of discussion and even of controversy between operators and employees.

The nominal working day, therefore, measures neither the length of time spent by the men at work nor the length of time they are underground; and it was not until recently, when the Federal Bureau of Labor Statistics made arrangements to obtain the necessary data, that any figures on these points were available. In connection with its periodic surveys of miners' earnings, the Bureau of Labor Statistics arranged to have a special record kept of the time actually spent in the mine by many thousands of tonnage men during typical biweekly pay periods. The results, which show the time spent at the working place and also the total time in the mine, will be found in the monthly Labor Review for July, 1925, pages 68 to 87, and for February, 1926, pages 77 to 87; and in Bulletins 316 and 416, all published by the Bureau of Labor Statistics, United States Department of Labor.

OUTPUT PER MAN

TABLE 37.—*Coal produced per man and average number of days worked per year, by States, 1923–1925*

State	1923			1924			1925		
	Days mines worked	Average tonnage per man		Days mines worked	Average tonnage per man		Days mines worked	Average tonnage per man	
		Per year	Per day		Per year	Per day		Per year	Per day
Alabama	232	680	2.93	220	684	3.11	246	738	3.00
Arkansas	97	329	3.39	134	433	3.24	112	335	2.99
Colorado	174	774	[1] 4.45	178	806	[1] 4.52	192	781	[1] 4.07
Illinois	158	795	5.02	148	765	5.16	161	860	5.33
Indiana	136	738	5.43	136	779	5.75	159	934	5.89
Iowa	181	498	2.75	161	452	2.80	153	464	3.02
Kansas	139	443	3.19	151	496	3.29	169	580	3.44
Kentucky	152	735	4.83	174	810	4.67	206	966	4.68
Maryland	178	608	3.42	173	565	3.27	209	753	3.61
Michigan	222	593	2.67	178	536	3.00	186	512	2.75
Missouri	155	477	3.07	135	415	3.08	166	527	3.18
Montana	179	896	5.00	173	909	5.26	171	1,138	6.64
New Mexico	216	708	3.28	204	662	3.25	202	742	3.68
North Dakota	182	837	4.60	165	925	5.62	153	1,013	6.61
Ohio	150	742	4.95	143	689	4.82	151	707	4.67
Oklahoma	133	398	2.99	124	379	3.05	153	413	2.70
Pennsylvania, bituminous	213	882	4.15	180	772	4.27	200	873	4.36
Tennessee	183	536	2.93	159	487	3.05	211	656	3.11
Texas	178	484	2.72	166	523	3.16	150	478	3.19
Utah	160	1,077	[1] 6.73	182	1,037	[1] 5.70	179	1,056	[1] 5.90
Virginia	212	832	3.92	226	843	3.73	254	936	3.69
Washington	213	680	3.19	202	688	3.41	193	681	3.52
West Virginia	169	919	5.44	182	995	5.48	225	1,111	4.94
Wyoming	192	1,004	5.23	176	950	5.41	178	1,051	5.90
Total bituminous	179	801	4.47	171	781	4.56	195	884	4.52
Pennsylvania anthracite	268	592	2.21	274	550	2.00	182	386	2.12
Grand total	195	763	3.91	192	733	3.81	192	777	4.04

[1] Probably too high because of practice common in some districts of men going into mine to shoot coal and load mine cars on days when tipples or mines as a whole are not in operation.

TABLE 38.—*Coal produced per man employed, 1916–1925, in net tons*

Year	Anthracite				Bituminous			
	Men employed	Days worked	Average tonnage		Men employed	Days worked	Average tonnage	
			Per day	Per year			Per day	Per year
1916	159,869	253	2.16	548	561,102	290	3.90	896
1917	154,174	285	[1] 2.27	[1] 646	603,143	243	3.77	915
1918	147,121	293	[1] 2.29	[1] 672	615,395	249	3.78	942
1919	154,571	266	2.14	570	621,998	195	3.84	749
1920	145,074	271	[1] 2.28	[1] 618	639,547	220	4.00	881
1921	159,499	271	2.09	567	663,754	149	4.20	627
1922	156,849	151	[1] 2.31	[1] 349	687,958	142	4.28	609
1923	157,743	268	2.21	592	704,793	179	4.47	801
1924	160,009	274	2.00	550	619,604	171	4.56	781
1925	160,312	182	2.12	386	588,493	195	4.52	884

[1] Heavy washery product.

TABLE 39.—*Bituminous coal produced per man per day in the seven States of largest production and in the United States, 1916–1925, in net tons*

Year	Total United States	Ohio	Indiana	Illinois	Pennsylvania	Colorado	West Virginia	Kentucky
1916	3.90	4.26	4.48	4.42	3.91	3.43	4.68	3.91
1917	[1] 3.77	4.26	4.52	4.22	3.80	3.33	[1] 4.35	[1] 3.72
1918	[1] 3.78	4.24	4.45	4.37	3.81	3.36	[1] 4.22	[1] 3.50
1919	[1] 3.84	4.41	4.72	4.48	3.96	3.88	[1] 4.18	[1] 3.49
1920	4.00	4.73	4.36	4.78	3.96	3.51	4.39	3.95
1921	4.20	4.60	4.86	4.80	4.03	3.83	4.79	4.11
1922	4.28	4.92	5.19	5.05	[2] 3.84	3.87	5.10	4.89
1923	4.47	4.95	5.43	5.02	4.15	4.45	5.44	4.83
1924	4.56	4.82	5.75	5.16	4.27	4.52	5.48	4.67
1925	4.52	4.67	5.89	5.33	4.36	4.07	4.94	4.68

[1] Apparent decrease largely explained by adoption of the 8-hour day in certain nonunion fields.
[2] Affected by strike.

TABLE 40.—*Coal produced from deep mines per man employed underground per day worked, 1916–1925, in net tons* [1]

Year	Anthracite	Bituminous	Year	Anthracite	Bituminous
1916	2.74	4.57	1921	2.70	4.86
1917	2.89	4.51	1922	2.87	4.98
1918	2.94	4.62	1923	[2] 2.70	5.15
1919	2.81	4.64	1924	[2] 2.53	5.17
1920	2.93	4.80	1925	[2] 2.60	5.09

[1] In making this computation certain estimates had to be made of the division of workers above and below ground. The probable error introduced by these estimates is too small to impair the value of the averages.
[2] Beginning with 1923, a small tonnage of culm-bank coal handled through breakers and hitherto counted as fresh-mined coal has been excluded, and the figures are therefore not exactly comparable with earlier years. The difference, however, is small. (See p. 512.)

STRIKES, SUSPENSIONS, AND LOCKOUTS

TABLE 41.—*Summary of strikes, suspensions, and lockouts in coal mines, 1916–1925*

Year	Number of men on strike	Total man days idle	Average number of days lost per man striking	Year	Number of men on strike	Total man days idle	Average number of days lost per man striking
1916	170,633	3,344,586	20	1921	151,263	3,106,103	21
1917	160,240	2,348,399	15	1922	603,031	73,497,043	122
1918	79,395	508,526	6	1923	197,214	3,868,543	20
1919	453,418	15,761,410	35	1924	129,452	5,362,748	41
1920	282,419	5,914,473	21	1925	186,369	16,433,036	88

TABLE 42.—*Days lost at coal mines on account of strikes, suspensions, and lockouts compared with days lost for other causes, 1916–1925*

[Includes both anthracite and bituminous coal mines]

Year	Days lost		
	On account of strikes and lockouts	On account of no market, car shortage, and similar difficulties [1]	Total
1916	3,344,586	49,214,165	52,558,751
1917	2,348,399	40,401,898	42,750,297
1918	508,526	38,001,284	38,509,810
1919	15,761,410	61,023,906	76,785,316
1920	5,914,473	55,732,698	61,647,171
1921	3,106,103	108,332,246	111,438,349
1922	73,497,043	65,186,691	138,683,734
1923	3,868,543	93,359,474	97,228,017
1924	5,362,748	84,963,306	90,326,054
1925	16,433,036	69,624,737	86,057,773
Total, 10 years	130,144,867	665,840,405	795,985,272

[1] Computed by the Bureau of Mines from the operators' reports of time worked, on the assumption that the potential working time was 308 days. Beginning with 1925, however, the potential working time in the anthracite region has been assumed to be 304 days.

TABLE 43.—*Strikes, suspensions, and lockouts in coal mines, by States, 1923–1925*

State	1923					1924					1925				
	Total number of men employed	Number of men on strike	Man days idle on account of strike	Average number of days lost on account of strike		Total number of men employed	Number of men on strike	Man days idle on account of strike	Average number of days lost on account of strike		Total number of men employed	Number of men on strike	Man days idle on account of strike	Average number of days lost on account of strike	
				Per man employed	Per man on strike				Per man employed	Per man on strike				Per man employed	Per man on strike
Alabama	30,035					27,956					27,097				
Arkansas	3,754	324	9,009	2	28	3,350	1,076	29,272	9	27	3,638	560	41,928	12	75
Colorado	13,340					12,954	120	840	(1)	7	13,203	595	6,943	(1)	12
Illinois	99,714	7,474	95,458	1	13	89,363	4,217	50,101	1	12	77,823	4,870	25,180	(1)	5
Indiana	35,408	10,765	104,604	3	10	27,558	7,699	159,743	6	21	22,732	7,919	96,963	4	12
Iowa	11,448	1,946	19,874	2	10	12,101	986	16,445	1	17	10,167	1,267	3,740	(1)	3
Kansas	9,761	949	24,741	3	26	8,561	2,706	118,918	14	44	7,800	530	8,080	1	15
Kentucky	60,811	2,699	92,035	2	34	55,766	8,933	1,735,739	31	194	57,024	1,954	162,534	3	83
Maryland	3,725	2,686	359,920	97	134	3,776	168	504	(1)	3	3,580				
Michigan	1,977	786	3,992	2	5	1,551	425	1,525	1	4	1,579	725	5,575	4	8
Missouri	6,952	312	10,857	2	35	5,977	1,580	76,660	13	49	5,114	110	1,287	(1)	12
Montana	3,511	25	25	(1)	(1)	3,196	17	53	(1)	3	2,680				
New Mexico	4,095					4,206					3,444				
North Dakota	1,621	85	6,933	4	82	1,298					1,307				
Ohio	54,555	16,486	203,161	4	12	44,229	10,256	217,752	5	21	39,658	6,572	170,208	4	26
Oklahoma	7,130	1,020	8,211	1	8	6,144	1,318	144,607	24	110	5,631	352	16,773	3	48
Pennsylvania, bituminous	194,981	10,984	157,130	1	14	169,322	8,793	361,226	2	41	156,798	7,414	234,389	1	32
Tennessee	11,244	572	24,766	2	43	9,365	2,134	244,945	26	115	8,314	250	2,350	(1)	9
Texas	2,452	137	18,141	7	132	2,195					2,108	87	261	(1)	3
Utah	4,381					4,330	58	310	(1)	5	4,441	280	10,920	2	39
Virginia	14,120					12,679					13,677				
Washington	4,306	1,754	50,681	12	29	3,858					3,726				
West Virginia	117,300	2,625	49,587	(1)	19	102,203	7,688	1,060,478	10	138	110,189	4,956	376,399	3	76
Wyoming	7,529					7,113					6,238				
Other States	643					553					525				
Total bituminous	704,793	61,629	1,239,125	2	20	619,604	58,179	4,219,118	7	73	588,493	38,441	1,163,530	2	30
Pennsylvania anthracite	157,743	135,585	2,629,418	17	19	160,009	71,273	1,143,630	7	16	160,312	147,928	15,269,506	95	103
Grand total	862,536	197,214	3,868,543	4	20	779,613	129,452	5,362,748	7	41	748,805	186,369	16,433,036	22	88

[1] One-half day or less.

UNDERGROUND HAULAGE EQUIPMENT

The high degree to which mechanization of the bituminous coal mines is being carried is indicated by a special study, made by the bureau, of methods of underground haulage used in 1924. The following analysis is adapted from an article, by a member of the bureau, published in Coal Age.[6] Of the 7,361 deep mines in operation during 1924 there were 3,585 producing 88 per cent of the output that reported the use of locomotives of some type underground. The mines not using locomotives, although numbering 3,776, produced only 12 per cent of the output.

A total of 3,377 mines reported one or more electric locomotives, and these mines produced 85.6 per cent of the output.

There were 14,723 locomotives of all types used underground during the year, of which 14,280 were electric, 85 compressed air, 226 gasoline, and 132 steam. The total number of animals employed underground was 36,352, and in addition there were 649 rope haulage units.

SOURCE OF INFORMATION

The information presented herewith was obtained through a question on the bureau's annual statistical report card for 1924 which was sent to all producers with an output of more than 2,000 tons. It covers all mines in operation during the year. A few operators failed to answer the question, but these gaps were partly filled by the data relating to haulage in the 1925 edition of The Coal Catalog, issued by the Keystone Consolidated Publishing Co., Pittsburgh.

Information was obtained from 5,703 out of the 7,361 deep mines that operated during 1924. The remaining 1,658 were largely "local commercial" mines with an annual output of less than 2,000 tons, from which an answer was not asked. To make the figures complete, estimates of the number of animals used by these local mines have been included in the totals. As these mines produced only 2.5 per cent of the output, the possible error introduced by the estimates is negligible.

The haulage equipment of stripping pits, of which 225 were in operation in 1924, and such equipment of deep mines as is used only on the surface are not included in the statistics.

CHANGES SINCE 1924

The figures give the first complete picture of the extent of the mechanization of haulage over the country as a whole. Further progress has undoubtedly been made since 1924, under the pressure to reduce costs caused by market conditions of the last three years. Statistics for 1927 would show a still higher percentage mined by use of locomotives and further gains of electric haulage at the expense of other types.

[6] Rogers, H. O., "Exit the mule": Coal Age, August, 1927, vol. 32, pp. 84–88.

NUMBER OF HAULAGE UNITS

Table 44 shows, by States, the number of underground haulage units in use in bituminous coal mines in 1924. Mine mules are still widely employed, but the number of animals of all kinds underground is a very small factor in the demand for work animals, for the total number of horses and mules in the country is about 24,000,000. Included in the 36,352 mine animals are a few dogs used in small mines working thin coal.

TABLE 44.—*Total number of underground haulage units used in bituminous coal mines in 1924*

State	Animals	Rope haulage units [1]	Storage battery locomotives		Electric trolley locomotives	Compressed air locomotives	Gasoline locomotives [2]	Steam locomotives [2]	Total number of locomotives
			With trolley	Without trolley					
Alabama	1,928	56	13	29	305	1	38	8	394
Alaska	21								
Arkansas	317	13		2	7		4		13
California	6								
Colorado	1,703	144	5	20	118	2	2	6	153
Georgia	13								
Idaho	1								
Illinois	4,378	14	85	304	1,153		15	6	1,563
Indiana	1,744		40	99	345		3	13	500
Iowa	979	31	4	2	58		2		66
Kansas	522		13	38	12		1	15	79
Kentucky	2,980	7	133	137	1,182	2	6	5	1,465
Maryland	299	2	5	4	76		4	1	90
Michigan	95			5	34				39
Missouri	317	2	2	9	10		2		23
Montana	271	3	4	3	55		1	1	64
Nebraska	1								
New Mexico	449	51	8	2	66		2		78
North Carolina	6	2							
North Dakota	173				5		2	1	8
Ohio	2,493	10	61	88	631	1	5		786
Oklahoma	548	5	1	8	8				17
Oregon	4								
Pennsylvania	8,843	170	176	276	3,559	42	61	36	4,150
South Dakota	16								
Tennessee	649	9	6	12	182		26	5	231
Texas	157	2		3	10		7	1	21
Utah	373	17	9	1	66				76
Virginia	478	3	18	36	460		3	9	526
Washington	149	7	4	15	67		4	4	94
West Virginia	5,906	12	188	419	3,477	36	38	21	4,179
Wyoming	533	89	4	3	100	1			108
	36,352	649	779	1,515	11,986	85	226	132	14,723

[1] Does not include rope hoists on main slopes. Data unsatisfactory because of misunderstanding of questionnaire.

[2] The figures for gasoline and steam locomotives do not include a large number employed exclusively on the surface.

Of special interest in connection with Table 44 is the rise of the electric locomotive and the decline of other types. According to W. W. Adams,[7] the number of storage-battery locomotives in use increased more than 300 per cent from 1918 to 1922, and the number of trolley locomotives increased 23 per cent. From 1922, the last year covered by Adams's study, to 1924 there was a further large increase in both types, but particularly in the storage-battery type. During the same period, 1918 to 1922, Adams noted a sharp decrease

[7] Adams, W. W., Kinds of Haulage and Cutting Machines in Coal Mines: Reports of Investigations, Serial 2352, Bureau of Mines, May, 1922.

in the number of compressed-air locomotives, and this decrease continued from 1922 to 1924. The use of gasoline and steam locomotives for inside work seems to be declining also.

ROPE-HAULAGE DATA UNSATISFACTORY

A question designed to find the number of rope-haulage units employed underground was included on the statistical report card, but it was evident from the returns that many operators confused this with rope hoists used on slopes. As the purpose of the study was to determine the system of underground haulage used to transport the coal from the working face to the shaft or slope or to the drift mouth, rope units employed in hoisting were clearly beyond the scope of the present analysis. In editing the returns every effort was made to eliminate rope units such as those described above, and the resulting figures are presented in Table 44 as the best available. The total number of rope-haulage units shown—649—is probably less than the number actually in use.

Unsatisfactory as are these data, they indicate clearly enough the restricted field occupied by rope haulage. Rope units are often employed where steep or irregular grades limit the use of locomotives. These conditions frequently occur in the Rocky Mountains, and it is notable that the States of Colorado, New Mexico, and Wyoming, although producing only 4 per cent of the output, contain 44 per cent of the rope units reported. Except under such special conditions rope haulage is not often employed in our bituminous mines, in contrast to those of Great Britain, where it is very common. As shown in Table 45 only 14 mines, producing less than 0.1 per cent of the tonnage, relied upon rope haulage exclusively. There were 146 other mines that combined ropes with animals, 40 mines that combined ropes with locomotives, and 122 that used all three, but the production of all the mines using ropes in any form was only 6.9 per cent of the total for the country.

It has, therefore, not seemed worth while to separate the rope-haulage mines in the subsequent analysis, and in Tables 46 to 49 the mines have been classified in three groups only: (1) Those using animals but no locomotives, (2) those using locomotives but no animals, and (3) those using a combination of locomotives and animals. All three groups, it will be understood, contain a small number of mines also using rope haulage.

TABLE 45.—*Number and production of bituminous coal mines, classified according to method of haulage employed, in 1924*

Method of haulage	Number of mines	Production (net tons)	Average output per mine	Per cent of deep-mined coal
Animals only	3,616	47,237,062	13,063	10.1
Rope only	14	196,761	14,054	.1
Locomotives only	1,472	154,214,737	104,765	32.8
Animals and rope	146	8,976,159	61,481	1.9
Animals and locomotives	1,951	235,194,999	120,551	50.0
Rope and locomotives	40	6,072,193	151,805	1.3
Animals, rope, and locomotives	122	18,187,673	149,079	3.8
Total deep-mined coal	7,361	470,079,584	63,861	100.0
Stripping operations	225	13,606,954	60,475	
Grand total	7,586	483,686,538	63,760	

TABLE 46.—*Number and production of bituminous coal mines, classified according to the three major methods of haulage employed, in 1924*

Method of haulage	Number of mines	Production (net tons)	Average per mine	Per cent of deep-mined production
Animals only (or animals and rope) [1]	3,776	56,409,982	14,939	12.0
Locomotives only (including 40 mines also using ropes)	1,512	160,286,930	106,010	34.1
Locomotives and animals (including 122 mines also using ropes)	2,073	253,382,672	122,230	53.9
Total deep-mined coal	7,361	470,079,584	63,861	100.0
Stripping operations	225	13,606,954	60,475	
Grand total	7,586	483,686,538	63,760	

[1] Includes 14 mines producing 196,761 tons that reported no means of haulage other than ropes.

ANALYSIS BY TONNAGE

The figures for number of units employed underground as given in Table 44 do not give a true idea of the relative importance of the various methods of haulage. What is really important is the proportion of the total output handled by each method. Table 46 shows that 12 per cent of the output came from mines using animals only, 34.1 per cent from mines using locomotives only, and something over half—53.9 per cent—from mines using both locomotives and animals. Tables 47 and 48 give the details by States.

TABLE 47.—*Number and production of bituminous coal mines, classified by methods of underground haulage employed, by States, in 1924*

State	Animals only (including a few mines also using ropes)				Locomotives only (including a few mines also using ropes)				Locomotives and animals (including a few mines also using ropes)					Strip operations		Total all mines	
	Number of mines	Number of animals	Number of rope units	Production (net tons)	Number of mines	Number of locomotives	Number of rope units	Production (net tons)	Number of mines	Number of animals	Number of locomotives	Number of rope units	Production (net tons)	Number of mines	Production (net tons)	Number of mines	Production (net tons)
Alabama	138	1,153	31	5,688,782	36	199	14	6,439,958	56	775	195	11	6,631,363	8	370,081	238	19,130,184
Alaska	8	21		99,663												8	99,663
Arkansas	66	302	12	1,089,215	5	10		41,282	5	15	3	1	97,699	10	223,307	86	1,451,503
Colorado	175	753	83	3,877,309	9	21	7	618,973	47	950	132	54	5,947,816			231	10,444,098
Georgia	2	13		9,290											65,657	2	74,947
Illinois	234	1,008	12	3,196,859	36	543		15,749,210	201	3,370	1,020	2	47,081,352	17	2,295,860	488	68,323,281
Indiana	115	506		2,772,485	29	236		5,096,032	77	1,238	264		11,100,507	27	2,511,189	248	21,480,213
Iowa	228	614	31	2,714,790	2	4		105,842	26	365	62		2,647,418		400	256	5,468,450
Kansas	177	380		1,697,971	6	39		594,066	19	142	40		1,160,622	26	795,074	228	4,247,733
Kentucky	254	929		3,175,701	224	893	2	23,416,838	169	2,051	572	5	17,253,810	13	1,300,855	660	45,147,204
Maryland	56	152		616,535	12	33		296,374	25	147	57	2	1,220,794			93	2,133,703
Michigan	1	1		3,500	2	11		269,764	6	94	28		557,756			9	831,020
Missouri	96	278	2	1,158,306	6	14		135,175	6	39	9		207,699	19	979,700	127	2,480,880
Montana	51	86	1	298,379	3	24	2	653,403	13	185	40		1,760,211	1	193,372	68	2,905,365
New Mexico	24	59	11	445,520					18	390	78	40	2,340,543			42	2,786,063
North Carolina	2	6	2	57,094												2	57,094
North Dakota	115	144		480,561	1	1		23,684	3	29	7		262,098	13	434,184	132	1,200,527
Ohio	417	828	3	4,101,785	76	315	2	5,410,312	207	1,665	471	5	18,094,227	50	2,866,683	750	30,473,007
Oklahoma	72	409	5	1,553,042	1	3		60,000	9	139	14		404,464	12	312,109	94	2,329,615
Pennsylvania	1,005	2,989	39	13,875,785	558	2,160	62	43,975,626	535	5,854	1,990	69	71,879,544	24	902,818	2,122	130,633,773
South Dakota	16	16		12,043												16	12,043
Tennessee	72	241	2	678,904	13	71		893,122	54	408	160	7	2,984,529			139	4,556,555
Texas	35	116	1	733,406	2	10		51,006	6	41	11	1	251,482	1	111,117	44	1,147,011
Utah	17	63	1	338,067	2	13	1	527,936	20	310	63	15	3,622,154			39	4,488,157
Virginia	40	132	1	354,177	45	348		6,715,879	30	346	178	2	3,623,408			115	10,693,464
Washington	36	82	3	598,855	11	44	1	850,041	11	67	50	3	1,204,771			58	2,653,667
West Virginia	280	1,054	3	4,663,222	431	2,256	8	48,189,884	505	4,852	1,923	1	48,565,343	4	244,448	1,220	101,662,897
Wyoming	35	223	10	2,101,883	2	7		172,523	25	310	101	79	4,483,062			62	6,757,468
Other States [1]	9	12		16,853											100	9	16,953
	3,776	12,570	253	56,409,982	1,512	7,255	99	160,286,930	2,073	23,782	7,468	297	253,382,672	225	13,606,954	7,586	483,686,538

[1] Includes California, Idaho, Nebraska, and Oregon.

MINES USING ANIMALS ONLY

Although the group of mines depending on animals only (including those using a combination of animals and ropes and also mines which reported the use of rope haulage only) comprises by far the largest number of mines, it accounted for less than one-eighth of the total deep-mined bituminous coal produced in the United States in 1924. As the average production of these mines amounted to less than 15,000 tons for the year, it is clear that this group includes the numerous small operations with an output too small to warrant the installation of mechanical equipment. In many of these mines, however, the retention of animals in preference to locomotives is due to other factors. Animal haulage is highly mobile and has very obvious advantages in localities where steep grades are prevalent or in gaseous workings where electric locomotives, unless explosion proof, would be dangerous.

From Table 48 one can see that animals constitute the chief means of underground motive power in the tier of States from Iowa to Texas. Mines using animals exclusively (or animals and ropes) accounted for 77.1 per cent of the deep-mined coal produced in Missouri, 77 per cent in Oklahoma, 75 per cent in Arkansas, and 70.8 per cent in Texas, while in Iowa and Kansas about 50 per cent of the production came from mines of this class. Natural conditions in this area have not favored mechanization. In Iowa local irregularities of the beds and in Oklahoma and Arkansas steeply pitching measures have limited the use of locomotives. The coal beds are relatively thin, particularly in Missouri, Kansas, and the Texas bituminous field, and the output per mine is correspondingly low, often too low to justify investment in electric locomotives. Throughout the region costs of production are high, and the competition of cheaper coal in the North and of oil and gas in the South has retarded the growth of the industry.

TABLE 48.—*Per cent of deep-mined bituminous coal produced by the three major methods of haulage employed, in 1924*

State	Produced in mines using—			State	Produced in mines using—		
	Animals only (including a few mines also using ropes)	Locomotives only (including a few mines also using ropes)	Locomotives and animals (including a few mines also using ropes)		Animals only (including a few mines also using ropes)	Locomotives only (including a few mines also using ropes)	Locomotives and animals (including a few mines also using ropes)
	Per cent	*Per cent*	*Per cent*		*Per cent*	*Per cent*	*Per cent*
Alabama	30.3	34.3	35.4	North Dakota	62.7	3.1	34.2
Alaska	100.0	----------	----------	Ohio	14.9	19.6	65.5
Arkansas	75.0	3.3	21.7	Oklahoma	77.0	3.0	20.0
California	100.0	----------	----------	Oregon	100.0	----------	----------
Colorado	37.1	5.9	57.0	Pennsylvania	10.7	33.9	55.4
Georgia	100.0	----------	----------	Tennessee	14.9	19.6	65.5
Illinois	4.8	23.9	71.3	Texas	70.8	4.9	24.3
Indiana	14.6	26.9	58.5	Utah	7.5	11.8	80.7
Iowa	49.7	1.9	48.4	Virginia	3.3	62.8	33.9
Kansas	49.2	17.2	33.6	Washington	22.6	32.0	45.4
Kentucky	7.2	53.4	39.4	West Virginia	4.6	47.5	47.9
Maryland	28.9	13.9	57.2	Wyoming	31.1	2.5	66.4
Michigan	.4	32.5	67.1	Other States	100.0	----------	----------
Missouri	77.1	9.0	13.9				
Montana	11.0	24.1	64.9		12.0	34.1	53.9
New Mexico	16.0	----------	84.0				

The Raton Mesa coal field in Colorado and New Mexico furnishes an excellent example of the influence of the dip of the beds mined upon the selection of haulage equipment. In Huerfano County, Colo., the average pitch of the seams worked is between 5° and 6°. Largely for this reason 43 per cent of the output in Huerfano County comes from mines using animals only (or using animals and ropes). Across the State line in Colfax County, N. Mex., the dip of the beds worked diminishes to an average of 1.5°, and here only 0.2 per cent of the coal produced comes from mines in this class. There are, of course, other causes contributing to this difference between the two districts, but certainly the physical condition of the beds mined is of great influence.

Other districts relying largely on animals are the longwall field of northern Illinois, the Broad Top district of Pennsylvania, and parts of Maryland, Alabama, and southern Ohio. In these districts also the causes are either the advanced age and small size of the workings or the physical conditions in the beds worked.

MINES USING LOCOMOTIVES ONLY

In 1924 there were 1,512 bituminous mines—producing more than 34 per cent of the deep-mined coal—that used locomotives only. The extent to which animals can be dispensed with and the entire work of haulage be performed with locomotives depends upon physical conditions, as already shown.

R. Dawson Hall calls attention to the fact that gathering locomotives have been introduced in many mines with thin coal simply because mules could not be used in the rooms and entries without an excessive lifting of bottom or brushing of top. Elimination of mules further depends upon local practice with respect to hand tramming or pushing cars, which also is related to the thickness of the seam. Where the miner is expected to push the empty car from the entry to the working face and then push the loaded car back from face to entry the task laid upon the haulage system proper is greatly simplified. Districts where this is the rule may show a high percentage of mines using locomotives merely because the miner is actually doing work which in other districts would be done by the mine mule or by a special gathering locomotive.

The rapidly growing Middle Appalachian region leads in the percentage produced by mines using locomotives only. Virginia came first in 1924 with 62 per cent. Following in order were Kentucky and West Virginia, where 53.4 per cent and 47.5 per cent of the tonnage, respectively, was produced in mines using no animals underground. West of the Mississippi a much smaller proportion of the output is produced by mines using locomotive haulage only, except in Washington, where 32 per cent of the output in 1924 was contributed by mines of this class.

MINES USING LOCOMOTIVES AND ANIMALS

The group of mines producing the largest part of the tonnage in 1924 was that using a combination of locomotives and animals. Nearly 54 per cent of the deep-mined coal produced during the year came from the 2,073 mines falling into this classification. Mines of

this class are widely distributed throughout the country and are not restricted to certain sections. Probably the chief reason for this is that this method of haulage is readily adaptable to mines which have outgrown the use of animal haulage but in which circumstances do not warrant complete mechanization. The mobility of animal haulage is chiefly valuable in the work of gathering, and there may be circumstances in which a combination of mules for gathering and locomotives for main haulage is cheapest.

ELECTRIC HAULAGE DOMINATES

Heretofore comparison has been made between animal haulage and locomotive haulage. Electric haulage as contrasted with all other types remains to be considered.

It will be seen from Table 44 that electric locomotives far outnumbered all others, and that out of 14,280 electric locomotives 11,986 were of the trolley type. How many of these were fitted with crab reels or conductor-cable reels the figures do not show. The trolley locomotive is less mobile than certain other types, because it can not leave the trolley wire and bonded rails for any great distance even when equipped with cable reel, but it is more widely used than all other types combined.

As has been previously noted, storage-battery locomotives have been gaining favor rapidly in recent years. From 1918 to 1924 the use of this type has increased at a rate far in excess of that of the trolley type, but the number still remains far less than that of the trolley locomotive. Storage-battery locomotives are primarily used for gathering purposes; as they can be made explosion proof they are particularly well adapted for operation in gaseous mines where the use of the trolley type is dangerous. Storage-battery locomotives have also been employed to some extent on main haulage ways, but when used exclusively for this service are less efficient than trolley locomotives.

Combination storage-battery and trolley locomotives are also coming into use, 779 being employed underground in 1924. They are of particular advantage where the workings are scattered.

Table 49 gives the percentage of deep-mined coal produced by mines using one or more electric locomotives. As this table shows, more than 85 per cent of the deep-mined coal produced in 1924 came from mines using electric haulage to some extent.

TABLE 49.—*Production and per cent of total output of deep-mined bituminous coal by mines using electric locomotives compared with those using all other methods of haulage, in 1924*

State	Mines using one or more electric locomotives				Mines using no electric locomotives			Total deep mines	
	Number of mines	Number of electric locomotives, all types	Production (net tons)	Per cent of production	Number of mines	Production (net tons)	Per cent of production	Number of mines	Production (net tons)
Alabama	59	347	11,919,285	63.5	171	6,840,818	36.5	230	18,760,103
Alaska					8	99,663	100.0	8	99,663
Arkansas	9	9	138,981	11.3	67	1,089,215	88.7	76	1,228,196
California					6	1,425	100.0	6	1,425
Colorado	51	143	6,469,461	61.9	180	3,974,637	38.1	231	10,444,098
Illinois	232	1,542	62,620,071	94.8	239	3,407,350	5.2	471	66,027,421
Indiana	105	484	15,846,879	83.5	116	3,122,145	16.5	221	18,969,024
Iowa	28	64	2,830,912	51.8	228	2,637,138	48.2	256	5,468,050
Kansas	25	63	1,691,875	49.0	177	1,760,784	51.0	202	3,452,659
Kentucky	374	1,452	40,041,675	91.3	273	3,804,674	8.7	647	43,846,349
Maryland	31	85	1,381,149	64.7	62	752,554	35.3	93	2,133,703
Michigan	8	39	827,520	99.6	1	3,500	.4	9	831,020
Missouri	10	21	332,970	22.2	98	1,168,210	77.8	108	1,501,180
Montana	15	62	2,409,949	88.8	52	302,044	11.2	67	2,711,993
New Mexico	10	76	2,277,467	81.7	32	508,596	18.3	42	2,786,063
North Dakota	2	5	238,063	31.1	117	528,280	68.9	119	766,343
Ohio	284	780	23,545,538	85.3	416	4,060,786	14.7	700	27,606,324
Oklahoma	9	17	464,464	23.0	73	1,553,042	77.0	82	2,017,506
Pennsylvania	1,047	4,011	113,087,561	87.2	1,051	16,643,394	12.8	2,098	129,730,955
South Dakota					16	12,043	100.0	16	12,043
Tennessee	46	200	2,515,631	55.2	93	2,040,924	44.8	139	4,556,555
Texas	4	13	115,634	11.2	39	920,260	88.8	43	1,035,894
Utah	21	76	4,197,600	93.5	18	290,557	6.5	39	4,488,157
Virginia	71	514	10,209,198	95.5	44	484,266	4.5	115	10,693,464
Washington	18	86	1,756,800	66.2	40	896,867	33.8	58	2,653,667
West Virginia	891	4,084	92,945,773	91.6	325	8,472,676	8.4	1,216	101,418,449
Wyoming	27	107	4,655,585	68.9	35	2,101,883	31.1	62	6,757,468
Other States[1]					7	81,812	100.0	7	81,812
	3,377	14,280	402,520,041	85.6	3,984	67,559,543	14.4	7,361	470,079,584

[1] Includes Georgia, Idaho, Nebraska, North Carolina, and Oregon.

Although steam locomotives were the type first used in underground haulage, comparatively few remain in service now. They are, however, still widely used on the surface and in stripping operations. In 1924 there were 226 gasoline locomotives employed underground in bituminous coal mines. This type of motor is used to some extent in almost all parts of the country, as indicated by Table 44. Its advantages are great mobility and low initial investment; its disadvantages are the fire hazard and the poisonous nature of its exhaust.

There were also 85 compressed-air locomotives in service underground in 1924, but the use of this type was confined almost entirely to Pennsylvania and West Virginia.

TABLE 50.—*Bituminous coal mined by different methods, by States, 1924 and 1925*

State	Mined by hand		Shot off the solid		Cut by machines		From strip pits		Not specified		Total production (net tons)
	Net tons	Percentage	Net tons	Percentage	Net tons	Percentage	Net tons	Percentage	Net tons	Percentage	
1924											
Alabama	3,004,923	15.7	6,004,886	31.4	9,704,205	50.7	370,081	1.9	46,089	0.3	19,130,184
Alaska	9,966	10.0	89,697	90.0							99,663
Arkansas	21,732	1.5	848,616	58.5	357,648	24.6	223,307	15.4	200		1,451,503
Colorado	4,053,426	38.8	933,651	9.0	5,327,817	51.0			129,204	1.2	10,444,098
Georgia			9,290	12.4			65,657	87.6			74,947
Illinois	2,276,118	3.3	14,615,745	21.4	48,915,060	71.6	2,295,860	3.4	220,498	.3	68,323,281
Indiana	687,524	3.2	5,342,727	24.9	12,845,838	59.8	2,511,189	11.7	92,935	.4	21,480,213
Iowa	999,524	18.3	3,269,790	59.8	1,011,472	18.5	400		187,264	3.4	5,468,450
Kansas	273,652	6.5	3,020,460	71.1	97,727	2.3	795,074	18.7	60,820	1.4	4,247,733
Kentucky	1,600,472	3.5	2,808,298	6.2	39,359,428	87.2	1,300,855	2.9	78,151	.2	45,147,204
Maryland	1,553,559	72.8	35,745	1.7	543,509	25.5			890		2,133,703
Michigan			39,687	4.8	791,333	95.2					831,020
Missouri	384,108	15.5	357,955	14.4	730,280	29.4	979,700	39.5	28,837	1.2	2,480,880
Montana	572,469	19.7	622,306	21.4	1,499,572	51.6	193,372	6.7	17,646	.6	2,905,365
New Mexico	935,493	33.6	872,136	31.3	967,343	34.7			11,091	.4	2,786,063
North Carolina	29,094	51.0	28,000	49.0							57,094
North Dakota	40,196	3.3	275,802	23.0	375,702	31.3	434,184	36.2	74,643	6.2	1,200,527
Ohio	549,751	1.8	431,526	1.4	26,321,897	86.4	2,866,683	9.4	303,150	1.0	30,473,007
Oklahoma	13,808	.6	643,339	27.6	1,359,959	58.4	312,109	13.4	400		2,329,615
Pennsylvania	41,253,204	31.6	3,150,343	2.4	84,608,265	64.8	902,818	.7	719,143	.5	130,633,773
South Dakota									12,043	100.0	12,043
Tennessee	594,451	13.1	1,851,315	40.6	2,092,453	45.9			18,336	.4	4,556,555
Texas	594,011	51.8	334,049	29.1	107,834	9.4	111,117	9.7			1,147,011
Utah	730,401	16.3	[1] 399,194	8.9	3,358,474	74.8			88		4,488,157
Virginia	224,245	2.1	1,923,891	18.0	8,518,845	79.7			26,483	.2	10,693,464
Washington	1,404,523	52.9	972,129	36.7	277,015	10.4					2,653,667
West Virginia	16,123,438	15.9	1,863,700	1.8	83,373,480	82.0	244,448	.2	57,831	.1	101,662,897
Wyoming	737,107	10.9	2,300,932	34.0	3,719,429	55.1					6,757,468
Other States	4,000	23.6	4,878	28.8	6,750	39.8	100	.6	1,225	7.2	16,953
	78,671,195	16.3	53,050,087	11.0	336,271,335	69.5	13,606,954	2.8	2,086,967	.4	483,686,538

[1] Includes 342,509 tons reported by the companies as "pillar coal," the method of mining which, of course, differs materially from solid shooting in rooms or entries. Indeed, most of the coal reported as shot off the solid in Utah is probably "pillar coal."

TABLE 50.—*Bituminous coal mined by different methods, by States, 1924 and 1925*—Continued

State	Mined by hand		Shot off the solid		Cut by machines		From strip pits		Not specified		Total production (net tons)
	Net tons	Per cent-age	Net tons	Per cent-age	Net tons	Per cent-age	Net tons	Per cent-age	Net tons	Per cent-age	
1925											
Alabama	2,432,110	12.1	6,559,783	32.8	10,594,391	53.0	403,682	2.0	14,429	0.1	20,004,395
Alaska	8,286	10.0	74,582	90.0							82,868
Arkansas	8,958	.7	472,814	38.8	537,295	44.0	199,092	16.3	1,880	.2	1,220,039
Colorado	3,835,049	37.2	933,178	9.1	5,437,991	52.7			104,333	1.0	10,310,551
Georgia			6,600	10.0			59,574	90.0			66,174
Illinois	2,572,518	3.8	12,161,107	18.2	48,572,292	72.6	3,398,159	5.1	205,283	.3	66,909,359
Indiana	391,726	1.8	4,577,590	21.6	12,925,739	60.9	3,269,386	15.4	60,525	.3	21,224,966
Iowa	901,839	19.1	2,780,633	59.0	922,405	19.6	229		109,737	2.3	4,714,843
Kansas	232,147	5.1	2,811,530	62.2	198,099	4.4	1,123,950	24.8	158,525	3.5	4,524,251
Kentucky	1,139,048	2.1	3,950,584	7.1	48,553,752	88.2	1,375,744	2.5	49,542	.1	55,068,670
Maryland	1,772,628	65.8	73,699	2.7	830,730	30.8			17,515	.7	2,694,572
Michigan			24,488	3.0	783,745	97.0					808,233
Missouri	322,215	12.0	136,180	5.0	912,004	33.9	1,202,201	44.6	121,615	4.5	2,694,215
Montana	264,407	8.7	565,187	18.6	1,555,461	51.1	641,730	21.0	16,901	.6	3,043,686
New Mexico	995,255	38.9	656,420	25.7	895,886	35.0			9,290	.4	2,556,851
North Carolina	47,685	73.2	16,468	25.3	1,000	1.5					65,153
North Dakota	9,614	.7	259,837	19.6	440,477	33.3	506,393	38.2	108,299	8.2	1,324,620
Ohio	596,056	2.1	404,022	1.4	23,655,819	84.4	3,059,324	10.9	318,891	1.2	28,034,112
Oklahoma	34,244	1.5	554,924	23.9	1,326,976	57.0	395,496	17.0	14,200	.6	2,325,840
Pennsylvania	43,720,883	31.9	4,593,373	3.4	86,973,404	63.5	800,615	.6	839,744	.6	136,928,019
South Dakota									14,447	100.0	14,447
Tennessee	781,852	14.3	2,109,114	38.7	2,553,838	46.8			9,207	.2	5,454,011
Texas	531,755	52.7	211,202	20.9	135,772	13.5	129,646	12.9			1,008,375
Utah	528,935	11.3	[2] 683,966	14.6	3,477,441	74.1					4,690,342
Virginia	319,611	2.5	2,006,309	15.7	10,472,410	81.8			1,113		12,799,443
Washington	1,417,723	55.9	965,037	38.0	138,752	5.5			16,378	.6	2,537,890
West Virginia	17,471,370	14.3	3,821,151	3.1	100,786,542	82.4	272,082	.2	29,814		122,380,959
Wyoming	794,612	12.1	1,676,618	25.6	4,043,537	61.7	33,579	.5	4,886	.1	6,553,232
Other States	7,500	59.4	5,100	40.4			25	.2			12,625
	81,138,026	15.6	53,091,496	10.2	366,725,758	70.6	16,870,907	3.2	2,226,554	.4	520,052,741

[2] Includes 604,310 tons reported by the companies as "pillar coal," the method of mining which, of course, differs materially from solid shooting in rooms or entries. Indeed, most of the coal reported as shot off the solid in Utah is probably "pillar coal."

UNDERCUTTING MACHINES

TABLE 51.—*Number of coal-cutting machines in bituminous coal mines, average output per machine, and per cent of total product mined by machines, by States, 1913 and 1923–1925*

State	Number of coal-cutting machines in use				Average output per machine (net tons)				Percentage of total product cut by machines			
	1913	1923	1924	1925	1913	1923	1924	1925	1913	1923	1924	1925
Alabama	377	395	426	422	10,940	22,067	22,780	25,105	23.3	42.6	50.7	53.0
Arkansas	27	40	59	87	9,300	4,769	6,062	6,176	11.2	14.6	24.6	44.0
Colorado	300	440	404	404	7,705	11,129	13,188	13,460	25.0	47.3	51.0	52.7
Illinois	1,845	3,151	2,923	2,551	17,686	17,191	16,735	19,040	53.0	68.3	71.6	72.6
Indiana	732	852	760	688	13,302	16,107	16,902	18,787	56.7	54.3	59.8	60.9
Iowa	28	81	68	67	4,311	14,584	14,875	13,767	1.6	20.7	18.5	19.6
Kansas	9	22	26	32	2,458	4,452	3,759	6,191	.3	2.2	2.3	4.4
Kentucky	1,263	1,928	1,910	1,926	11,365	19,559	20,607	25,210	73.2	84.2	87.2	88.2
Maryland	13	47	43	51	6,384	12,398	12,640	16,289	1.7	25.5	25.5	30.8
Michigan	130	80	64	63	6,636	13,579	12,365	12,440	70.0	92.7	95.2	97.0
Missouri	104	135	113	98	8,307	7,450	6,463	9,306	20.0	29.6	29.4	33.9
Montana	97	95	94	81	11,099	15,746	15,953	19,203	33.2	47.5	51.6	51.1
New Mexico	44	107	109	87	11,297	7,960	8,875	10,298	13.4	29.2	34.7	35.0
North Carolina		1		1		5,000		1,000		13.9		1.5
North Dakota	13	25	23	25	17,094	17,040	16,335	17,619	44.9	30.8	31.3	33.3
Ohio	1,681	2,351	1,906	1,467	19,418	15,260	13,810	16,125	90.2	88.5	86.4	84.4
Oklahoma	103	183	187	168	6,511	8,943	7,273	7,899	16.1	56.7	58.4	57.0
Pennsylvania	6,301	6,481	5,377	5,088	14,678	17,020	15,735	17,094	53.2	64.1	64.8	63.5
Tennessee	252	171	146	150	7,312	11,692	14,332	17,026	26.7	33.1	45.9	46.8
Texas	24	5	8	8	4,204	8,904	13,479	16,972	4.2	3.8	9.4	13.5
Utah	50	192	191	203	12,510	16,778	17,492	17,130	19.2	68.3	74.8	74.1
Virginia	187	277	282	280	22,497	31,210	29,174	37,401	47.6	73.5	79.7	81.8
Washington	63	26	20	14	4,453	9,726	13,851	9,911	7.2	8.6	10.4	5.5
West Virginia	2,539	3,936	3,312	3,381	15,500	21,592	25,173	29,810	55.3	78.7	82.0	82.4
Wyoming	195	208	208	209	15,645	18,237	17,882	19,347	41.3	50.1	55.1	61.7
Other States	2		1		600		6,750		4.8		39.8	
	16,379	21,229	18,660	17,551	14,801	17,779	18,021	20,895	50.7	66.9	69.5	70.6

TABLE 52.—*Coal mined by undercutting machines, 1916–1925*

Year	Anthracite				Bituminous			
	Machines in use	Quantity mined by undercutting machines (net tons)		Per cent of total fresh-mined product cut by machines	Machines in use	Quantity mined by undercutting machines (net tons)		Per cent of total product cut by machines
		Total	Average per machine			Total	Average per machine	
1916	172	1,839,506	10,695	2.2	16,198	283,691,475	17,514	56.5
1917	155	1,955,223	12,614	2.1	17,235	306,396,127	17,777	55.5
1918	176	1,857,514	10,554	2.1	18,463	323,931,133	17,545	55.9
1919	(1)	1,575,205	(1)	1.9	18,959	276,019,799	14,559	59.2
1920	139	938,073	6,749	1.1	19,103	339,813,476	17,788	59.8
1921	114	979,145	8,589	1.1	19,618	272,702,389	13,901	65.6
1922	82	502,793	6,132	1.0	20,436	267,032,931	13,067	63.2
1923	162	1,208,542	7,460	1.4	21,229	377,435,543	17,779	66.9
1924	212	1,423,884	6,716	1.7	18,660	336,271,335	18,021	69.5
1925	159	941,189	5,919	1.6	17,551	366,725,758	20,895	70.6

(1) Not available.

STRIPPING OPERATIONS

TABLE 53.—*Coal recovered from strip pits, 1914–1925*

Year	Pennsylvania anthracite				Bituminous coal				Total			
	Number of power shovels in use	Quantity mined by stripping (net tons)		Per cent of fresh-mined total that was stripped	Number of power shovels in use	Quantity mined by stripping (net tons) [1]		Per cent of total that was stripped	Number of power shovels in use	Quantity mined by stripping (net tons)		Per cent of total that was stripped
		Total	Average per shovel			Total	Average per shovel			Total	Average per shovel	
1914	[2]	[2]	[2]	[2]	48	1,280,946	26,686	0.3	[2]	[2]	[2]	[2]
1915	57	1,121,603	19,677	[2]	87	2,831,619	32,547	.6	144	3,953,222	27,453	0.7
1916	105	1,987,800	18,930	1.4	111	3,933,395	35,436	.8	216	5,921,195	27,413	1.0
1917	76	2,301,588	30,284	2.5	182	5,789,977	31,813	1.0	258	8,091,565	31,363	1.2
1918	82	2,360,183	28,783	2.6	276	8,288,245	30,030	1.4	358	10,648,428	29,744	1.6
1919	89	2,006,879	22,549	2.4	287	5,634,951	19,634	1.2	376	7,641,830	20,324	1.4
1920	96	2,054,441	21,400	2.5	312	8,859,553	28,396	1.5	408	10,913,994	26,750	1.7
1921	85	2,027,790	23,856	2.3	279	4,699,511	16,844	1.1	364	6,727,301	18,482	1.3
1922	69	949,745	13,764	1.9	379	9,886,431	26,086	2.3	448	10,836,176	24,188	2.3
1923	95	2,263,098	23,822	2.7	442	11,844,347	26,797	2.1	537	14,107,445	26,271	2.1
1924	95	1,865,677	19,639	2.2	420	13,606,954	32,398	2.8	515	15,472,631	30,044	2.7
1925	97	1,578,478	16,273	2.7	389	16,870,907	43,370	3.2	486	18,449,385	37,962	3.2

[1] For the years 1914 to 1923, inclusive, the figures of quantity mined by stripping do not include a small amount which was stripped by some other means than steam shovels, so for these years the tonnages are slightly less than the total recovered by stripping shown in other tables.

[2] Not available.

The growing number of strip pits and the peculiar character of their operation make it advisable to present statistics of labor for such mines separate from the deep mines. Table 54 is a summary of the reports of all stripping operations that produced bituminous coal in 1925. As some companies develop their coal lands by stripping along the outcrops and by underground methods where the cover becomes thicker, it is not always possible to separate the particulars relating to stripping from the particulars relating to deep mining. Hence, the table shows a considerable number of men employed underground, and the figures of days worked and the computed average output per man per day embrace their activities as well as those of the men engaged exclusively in stripping work on the surface.

TABLE 54.—*Summary of stripping operations that produced bituminous coal in 1925*

[For mines that recover coal both by stripping and by underground operations the returns do not permit separating men engaged in stripping from those engaged in other work. For this reason the figures of men employed represent all persons working at these mines, including those underground. The total tons produced by both methods at these same mines are also shown]

State and county	Number of strip pits	Number of shovels	Coal produced (net tons)		Total value at same mines	Average value per ton	Men employed				Days worked	Per cent of county or State total that was mined by stripping
			Mined by stripping	Total at same mines			Underground		Surface	Total		
							Miners, loaders, and shot firers	All others [1]				
Alabama: Bibb and Walker	11	19	403,682	732,682	$1,460,000	$1.99	306	117	415	838	215	[2] 5.7
Arkansas:												
Franklin	5	9	126,414	126,414	381,000	3.01			227	227	112	66.2
Johnson	3	6	72,678	72,678	315,000	4.33			120	120	95	22.8
State total	8	15	199,092	199,092	696,000	3.50			347	347	106	16.3
Georgia: Walker	1	3	59,574	66,174	220,000	3.32	48	19	70	137	220	90.0
Illinois:												
Fulton, Jackson, Perry, St. Clair, and Saline	7	21	1,897,183	1,897,183	3,210,000	1.69			491	491	215	14.7
Vermilion	8	15	931,217	1,002,325	1,902,000	1.90	60	13	412	485	198	27.2
Williamson	4	10	569,759	569,759	907,000	1.59			134	134	208	6.9
State total	19	46	3,398,159	3,469,267	6,019,000	1.73	60	13	1,037	1,110	207	5.1
Indiana:												
Clay	5	12	470,802	470,802	827,000	1.76			294	294	146	48.3
Greene	3	6	231,588	231,588	325,000	1.40			137	137	111	18.2
Owen, Sullivan, and Vigo	6	12	459,725	459,725	861,000	1.87			261	261	158	4.9
Pike	4	18	1,576,508	1,576,508	2,707,000	1.72			565	565	245	73.8
Warrick	4	9	530,763	530,763	904,000	1.70			283	283	146	59.5
State total	22	57	3,269,386	3,269,386	5,624,000	1.72			1,540	1,540	181	15.4
Kansas:												
Bourbon	1		2,200	2,200	6,000	2.73			9	9	44	17.6
Cherokee	15	16	722,422	722,422	1,767,000	2.45			321	321	146	61.4
Crawford	22	17	399,328	399,328	1,053,000	2.64			380	380	141	12.8
State total	38	33	1,123,950	1,123,950	2,826,000	2.51			710	710	142	24.8

Kentucky:												
Hopkins	8	22	1,096,741	1,115,741	1,559,000	1.40	25	10	579	614	191	28.0
Muhlenberg and Ohio	3	7	279,003	279,003	367,000	1.32			240	240	133	6.0
State total	11	29	1,375,744	1,394,744	1,926,000	1.38	25	10	819	854	175	2.5
Missouri:												
Barton	13	17	906,191	906,191	2,543,000	2.81			555	555	156	95.6
Bates	4	6	188,511	188,511	391,000	2.07			120	120	202	71.5
Henry, St. Clair, and Vernon	4	4	107,499	107,499	285,000	2.65			107	107	194	91.5
State total	21	27	1,202,201	1,202,201	3,219,000	2.68			782	782	168	44.6
North Dakota:												
Bowman, Divide, Hettinger, McLean, Mercer, and Ward	7	5	174,675	176,317	289,000	1.64	3	2	103	108	151	31.9
Burke	8	6	331,718	331,718	622,000	1.88			166	166	145	100.0
State total	15	11	506,393	508,035	911,000	1.79	3	2	269	274	148	38.2
Ohio:												
Carroll, Columbiana, and Hocking	4	6	92,663	107,514	235,000	2.19	10	4	45	59	182	6.1
Harrison	15	32	1,956,214	1,956,214	2,789,000	1.43			744	744	196	69.2
Jefferson	6	20	704,121	709,775	1,188,000	1.67	25	6	349	380	186	13.6
Muskingum	3	3	57,055	57,055	92,000	1.61			102	102	288	18.9
Perry	4	12	133,004	133,004	226,000	1.70			191	191	91	8.4
Tuscarawas	5	5	116,267	127,604	259,000	2.03	12	3	47	62	205	9.0
State total	37	78	3,059,324	3,091,166	4,789,000	1.55	47	13	1,478	1,538	169	10.9
Oklahoma:												
Haskell	3	3	81,288	129,132	397,000	3.07	19	10	136	165	280	62.9
Le Flore, Muskogee, and Wagoner	3	9	134,273	134,273	420,000	3.13			148	148	169	37.1
Tulsa	3	5	179,935	179,935	583,000	3.24			155	155	258	87.5
State total	9	17	395,496	443,340	1,400,000	3.16	19	10	439	468	238	17.0
Pennsylvania:												
Allegheny	4	7	176,504	205,158	408,000	1.99	34	6	102	142	200	1.5
Center, Clarion, Clinton, Jefferson, and Somerset	7	9	103,251	111,893	212,000	1.89	31	7	112	150	83	.7
Clearfield	4	6	5,351	10,213	18,000	1.76	45	4	19	68	34	.1
Washington	3	8	231,332	231,332	358,000	1.55			120	120	243	1.5
Westmoreland	7	9	284,177	656,109	1,053,000	1.60	219	24	182	425	250	1.4
State total	25	39	800,615	1,214,705	2,049,000	1.69	329	41	535	905	197	.6
West Virginia: Harrison and Taylor	5	8	272,082	273,375	332,000	1.21	7	3	102	112	192	[2] 3.7
Other States [3]	5	7	805,209	805,209	1,139,000	1.41			126	126	216	[2] 71.8
Grand total	227	389	16,870,907	17,793,326	32,610,000	1.83	844	28	8,669	9,741	182	3.2

[1] Includes haulage and track men.

[2] Per cent of county totals, not State.

[3] California, Iowa, Montana, Texas, and Wyoming.

UNDERGROUND LOADING MACHINES

The great interest in mechanical loading has led the Bureau of Mines to make a study of the number of loading machines in bituminous coal mines. The figures obtained were published in Weekly Coal Report No. 489, and the following discussion is abstracted from an article, by members of the bureau, that was published in Coal Age.[8]

The quantity of bituminous coal loaded underground by machine jumped from 1,879,000 tons in 1923 to 6,243,000 tons in 1925, and a further large increase seems assured for 1926. The remarkable growth of machine loading may be seen from a comparison with machine cutting or with stripping. More bituminous coal is now loaded by machine in the United States than was cut by machine in 1890 or than was won by stripping as late as 1917.

The six and a quarter million tons machine loaded in 1925 were handled by 340 machines installed in 95 mines. Fourteen other mines had 42 additional machines, but did not report the tonnage loaded by them. As most of this group were experimental installations, they loaded only small amounts of coal mechanically. Details are given in Table 55.

The study brings to completion an inquiry begun through the United States Geological Survey in 1921. For the years before 1923 the results obtained did not permit statistical tabulation. It is clear, however, that the number of machines in use and the tonnage loaded were much less than in 1923. For statistical purposes the commercial use of the loader may be said to begin in 1923.

The method of gathering information has been as follows: Every known manufacturer of loading equipment was asked to furnish a list of the mining companies that had bought or installed machines. The companies thus indicated were then asked to supply information as to the number of machines in use, the mines where they have been installed, the dates of installation, and the tonnages of coal loaded by them. In addition to the list of users furnished by machine manufacturers and the operation and production data furnished by mine operators, a further check against omissions was made by an inquiry in the annual statistical questionnaire sent to all mine operators. Thus, two sources of information have been used. The bureau takes this occasion to acknowledge gratefully the assistance given by the many companies which have furnished data.

For the purpose of this study a loading machine has been defined as one that gathers coal at the face in an underground mine and loads it mechanically onto either mine cars or conveyors. Drag scrapers have been included when hand loading was eliminated. Belt or shaking conveyors, whether at the face or elsewhere, have not been counted, unless the act of loading onto the conveyor was performed mechanically, the purpose of the study being to determine the degree of substitution of machine work for hand shoveling. Difficulty was experienced in classifying elevating conveyors, such as the Jeffrey pit-car loader and one or two other types, which require some hand work to get the coal onto the conveyor but which nevertheless eliminate most of the labor of lifting from floor to mine car. Because of this potential economy in hand shoveling it was decided to include such machines in the figures although, of course, they represent a less complete mechanization than do loading machines proper. Pit-car loaders have been most used in Illinois and account for a large part of the 1,293,929 tons of machine-loaded coal reported from that State. Surface stripping operations, which are covered elsewhere in the bureau's statistical reports (see Table 54), are not included. No attempt has been made to compare the number and performance of different makes or types of machines. Similarly, machines belonging to the manufacturer and temporarily installed for demonstration or experiment have not been counted.

The columns of the table under the heading "Other mines reporting machines but not tonnage loaded," include two types of report—first, cases that were clearly reported as experimental, and, second, cases where the operators did not report the tons loaded but did state the number of machines in use. In a great majority of the latter cases the operators when questioned further stated

[8] Kenny, Raymond, and Tryon, F. G., "Machine loading gains rapidly in last three years": Coal Age, vol. 30, Dec. 16, 1926, pp. 847-848.

that the use of machines was still in an experimental stage, and that they were not ready to report tonnage figures. It may be assumed, therefore, that practically all of the 42 machines used in 1925 for which no tonnages were reported were employed experimentally, and the same would apply to the 60 machines so reported in 1924 and the 16 in 1923.

In considering the rate at which mechanical loading can be introduced the early experience with machine cutting is of interest. Seventy-one per cent of the soft coal mined in 1925 was cut by machine, but this large percentage was the result of 45 years of sales effort and adaptation, to say nothing of many years of preliminary experiment before a workable machine could be devised. The machine cutter was invented in England and began to be manufactured for sale in the United States about 1880. Prior to 1888 a total of approximately 735 machines had been sold by American manufacturers, many of which were doubtless soon discarded (E. W. Parker, Coal in 1897, Mineral Resources, Part II, p. 324). The first statistical survey of cutting machines covered the year 1891 and found 545 machines in use with which 6,211,732 tons were mined. As the total product for that year was 117,900,000 tons, it will be seen that in the 11 years from 1880 to 1891 machine cutting had been extended to 5.3 per cent of the output. The sale of coal-loading machines, on the other hand, has been actively pushed for barely five years, and in this time the tonnage loaded by machine has come to equal that cut mechanically after 11 years of active effort, though because the output of to-day is so much larger the proportion loaded by machine is still only 1.2 per cent of the total. From 1923 to 1925 the increase in machine loading amounted to 232 per cent.

In 1925 the leading States in the order of their production of coal by machine loaders were: West Virginia (including Tazewell County, Va.), Illinois, Indiana, Wyoming, Pennsylvania, and Virginia (except Tazewell County). The total production figures of these States and the per cent of coal that was machine loaded are as shown in Table 56.

TABLE 55.—*Loading machines used underground in bituminous coal mines, by States, 1923–1925*

[Includes elevating conveyors of type of the Jeffrey pit-car loader and one or two others]

State	1923					1924					1925				
	Number of mines	Number of machines	Net tons loaded by machines	Other mines reporting machines but not tonnage loaded [1]		Number of mines	Number of machines	Net tons loaded by machines	Other mines reporting machines but not tonnage loaded [1]		Number of mines	Number of machines	Net tons loaded by machines	Other mines reporting machines but not tonnage loaded [1]	
				Mines	Machines				Mines	Machines				Mines	Machines
Alabama	3	[2]	[2]			3	[2]	[2]	4	9	2	[2]	[2]	2	[2]
Arkansas									1	[2]	1	[2]	[2]		
Colorado	1	[2]	[2]			3	[2]	[2]	1	[2]	2	[2]	[2]		
Illinois	2	[2]	[2]			4	28	259, 584	3	[2]	16	102	1, 293, 929	4	12
Indiana	4	18	77, 542			8	37	325, 117	4	9	10	62	1, 030, 490	2	[2]
Iowa						1	[2]	[2]			3	5	18, 200		
Kansas						1	[2]	[2]							
Kentucky	5	8	34, 015	7	10	6	15	96, 077	2	[2]	6	11	157, 862	1	[2]
Maryland	2	[2]	[2]			2	[2]	[3]			1	[2]	[2]		
Michigan											2	[2]	[2]		
Ohio				1	[2]	3	10	47, 357	1	[2]	2	[2]	[2]		
Oklahoma						1	[2]	[2]	2	[2]					
Pennsylvania	5	9	52, 014	1	[2]	11	20	153, 287	1	[2]	14	34	233, 023	1	[2]
Tennessee						1	[2]	[2]	1	[2]	1	[2]	[2]		
Virginia [3]	3	7	40, 939			5	11	141, 351			4	7	224, 032		
West Virginia [4]	33	54	1, 367, 688	4	4	32	67	2, 012, 790	12	17	26	58	2, 480, 768	4	8
Wyoming	2	[2]	[2]			2	[2]	[2]			5	30	579, 272		
Undistributed		29	307, 528		2		31	459, 959		25		31	225, 528		22
	60	125	1, 879, 726	13	16	83	219	3, 495, 522	32	60	95	340	6, 243, 104	14	42

[1] In most of these mines the use of loading machines was in the experimental stage only.
[2] Included under "Undistributed" to avoid disclosing individual operations.
[3] Excluding Tazewell County.
[4] Including Tazewell County, Va.

West Virginia leads in tonnage loaded by machine but is outranked in per cent of total production mechanically loaded by Wyoming, Indiana, and Virginia.

Growth of the use of loading machines was most rapid in 1925 in Wyoming, Illinois, and Indiana, although actual increases were shown in West Virginia, Pennsylvania, Kentucky, and Virginia.

The leading producing district in the entire country in the use of loading machines was the Pocahontas field, extending from McDowell County in southern West Virginia to and including part of Tazewell County, Va. Less than one-sixth of the machine-loaded tonnage for West Virginia was from all the other fields of the State combined. It was reported mainly from Logan, Harrison, Raleigh, and Fayette Counties.

Machine-loaded tonnage in Illinois in 1925 came principally from Saline, Marion, Franklin, and Jackson Counties, in the southern Illinois fields. The bulk of the Indiana machine-loaded tonnage was in Sullivan, Pike, Vigo, and Gibson Counties. More than half was in Sullivan County alone.

Of the Wyoming machine-loaded tonnage more than half was reported from Carbon and Sweetwater Counties in the southern Wyoming field, the remainder being reported from Sheridan County in northern Wyoming. The Pennsylvania tonnage came mainly from Cambria and Indiana, with a small proportion from Somerset and Westmoreland Counties. Almost two-thirds of the Kentucky machine tonnage was reported from Harlan, Perry, and Johnson Counties in the eastern portion of the State, and the remainder was from Union and Muhlenberg Counties in western Kentucky.

TABLE 56.—*Percentage of total production that was loaded by machines in certain States in 1925*

State	Total production (net tons)	Loaded by machines (net tons)	Per cent by machines
West Virginia (including Tazewell County, Va.)	124, 509, 000	2, 481, 000	2. 0
Illinois	66, 909, 000	1, 294, 000	1. 9
Indiana	21, 225, 000	1, 030, 000	4. 8
Wyoming	6, 553, 000	579, 000	8. 8
Pennsylvania	136, 928, 000	233, 000	. 2
Virginia (excluding Tazewell County)	10, 671, 000	224, 000	2. 1

COAL WASHING

Table 57 summarizes the available statistics of coal washing in the United States. The first column gives the production of anthracite culm-bank washeries. Data are not available, however, on the extensive wet preparation of fresh-mined anthracite.

Wet preparation is little used in the American bituminous coal industry, except in Alabama, Washington, and certain districts of Illinois, Pennsylvania, and West Virginia. In 1923—the last year for which data are available—the total output of bituminous coal washeries was slightly in excess of 20,000,000 net tons. As the total bituminous production of the country in that year was approximately 565,000,000 net tons, the percentage of washed coal to the total bituminous output was 3.6. Mineral Resources, 1923, Part II, pages 588 to 590, presents these data in detail.

The last columns of Table 57 give the quantity of coal, classified as washed and unwashed, charged into coke ovens. Most of this washed coking coal is washed at the mines and has already appeared in the figures of output of bituminous coal washeries. Some of it is washed at the coke ovens by the coke producer, but no figures are available to separate the washed coal charged into coke ovens into that washed at the coke plant and that received from the mines in a washed condition.

TABLE 57.—*Summary of available statistics on coal-washing operations, 1900–1925*

Year	Output of anthracite culm-bank washeries, cleaned coal (gross tons) [1]	Output of bituminous coal washeries at the mines, cleaned coal		Coal charged into coke ovens [3]		
		Net tons	Per cent [2]	Washed (net tons)	Unwashed (net tons)	Total (net tons)
1900	2,059,000	[4]		5,374,447	26,739,096	32,113,543
1910	3,296,000	16,035,387	3.8	13,691,925	49,396,402	63,088,327
1915	3,359,214	20,873,727	4.7	13,257,712	48,575,186	61,832,898
1920	5,669,265	17,984,289	3.2	13,423,691	62,767,141	76,190,832
1921	1,716,632	13,628,724	3.3	6,139,628	31,048,929	37,188,557
1922	2,943,286	[4]		9,083,820	45,254,718	54,338,538
1923	4,016,126	20,140,385	3.6	14,037,851	70,322,092	84,359,943
1924	1,099,813	[4]		11,733,301	53,242,348	64,975,649
1925	922,276	[4]		11,631,984	62,900,248	74,532,232

[1] This does not include the very large tonnage of fresh-mined anthracite that receives wet and dry preparation.
[2] Percentage of cleaned coal to total output.
[3] Most of the washed coal charged into coke ovens is washed at the mines and is therefore included in the preceding column, "Output of bituminous coal washeries at the mines."
[4] Not available.

NUMBER AND SIZE OF MINES

As already pointed out (p. 406), no statistics of the production of wagon mines were collected in 1925. It was known that most of the wagon mines working in 1922 and 1923 had closed in the latter part of 1923, and in 1924 and 1925 the market conditions were so unfavorable that the production of the few wagon mines which may have been operating must have been extremely small. Those who wish detailed statistics of the number, location, and output of wagon mines will find them in the report for 1923 (Mineral Resources, Part II, pp. 591–606).

The following tables (58 to 60) deal exclusively with the commercial mines—that term including, as already explained, many small properties producing as little as 1,000 tons but operating fairly steadily year after year.

For convenience in studying production by size of mines the mines are divided into five classes. Class 1 includes mines that produce each year more than 200,000 tons; class 2, those that produce less than 200,000 and more than 100,000 tons; class 3, those that produce less than 100,000 and more than 50,000 tons; class 4, those that produce less than 50,000 and more than 10,000 tons; and class 5, those that produce less than 10,000 tons. As this classification is made according to performance, not according to capacity, the number of mines in a given class is not constant from year to year. In 1920, for example, 701 mines were listed in class 1; in 1921, 482; in 1922, 416; in 1923, 748; in 1924, 646; and in 1925, 714. These fluctuations do not indicate a corresponding change from year to year in the num-

ber of mines having the acreage and the development that would enable them to produce annually 200,000 tons or more, but they do indicate that in a given year only the number of mines listed in class 1 were able to produce more than 200,000 tons.

TABLE 58.—*Number and production of commercial bituminous coal mines, by size classes, in 1924* [1]

[No canvass of wagon mines was made]

State	Class 1A (more than 500,000 tons)					Class 1B (200,000 to 500,000 tons)				
	Mines		Production			Mines		Production		
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage
Alabama	4	1.7	3,164,081	791,020	16.5	17	7.2	5,050,160	297,068	26.4
Alaska										
Arkansas										
California, Idaho, Nebraska, and Oregon										
Colorado						15	6.5	3,860,126	257,342	37.0
Georgia										
Illinois	46	9.4	34,357,009	746,891	50.3	60	12.3	18,690,508	311,508	27.4
Indiana	3	1.2	1,911,657	637,219	8.9	34	13.7	10,078,878	296,438	46.9
Iowa						4	1.6	1,225,672	306,418	22.4
Kansas						2	.9	460,152	230,076	10.8
Kentucky:										
Eastern	4	.8	3,337,816	834,454	9.2	42	8.5	10,440,018	248,572	28.9
Western						8	4.9	2,053,810	256,726	22.8
Maryland										
Michigan						2	22.2	479,036	239,518	57.6
Missouri										
Montana	2	2.9	1,253,784	626,892	43.2	1	1.5	202,167	202,167	7.0
New Mexico	1	2.4	500,061	500,061	17.9	1	2.4	241,507	241,507	8.7
North Carolina										
North Dakota										
Ohio	3	.4	1,614,613	538,204	5.3	40	5.3	11,560,254	289,006	37.9
Oklahoma										
Pennsylvania	47	2.2	31,184,295	663,496	23.9	134	6.3	39,466,552	294,526	30.2
South Dakota										
Tennessee										
Texas										
Utah						8	20.5	2,383,637	297,955	53.1
Virginia	4	3.5	2,692,815	673,203	25.2	18	15.7	4,711,967	261,776	44.1
Washington						5	8.6	1,273,623	254,724	48.0
West Virginia	15	1.2	8,551,308	570,087	8.4	117	9.6	33,990,720	290,519	33.4
Wyoming						9	14.5	2,601,237	289,026	38.5
	129	1.7	88,567,439	686,569	18.3	517	6.8	148,770,024	287,756	30.7

[1] Note that this table represents mines, not companies, for which the showing would be very different.

TABLE 58.—*Number and production of commercial bituminous coal mines, by size classes, in 1924*—Continued

State	Class 2 (100,000 to 200,000 tons)					Class 3 (50,000 to 100,000 tons)				
	Mines		Production			Mines		Production		
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage
Alabama	27	11.3	3,861,196	143,007	20.2	49	20.6	3,882,027	79,225	20.3
Alaska						1	12.5	51,426	51,426	51.6
Arkansas	1	1.2	122,099	122,099	8.4	7	8.1	452,232	64,605	31.2
California, Idaho, Nebraska, and Oregon										
Colorado	21	9.1	3,037,942	144,664	29.1	27	11.7	1,910,957	70,776	18.3
Georgia						1	50.0	72,947	72,947	97.3
Illinois	59	12.1	8,246,762	139,775	12.1	58	11.9	4,361,333	75,195	6.4
Indiana	33	13.3	4,898,610	148,443	22.8	39	15.7	2,816,277	72,212	13.1
Iowa	11	4.3	1,527,983	138,908	27.9	14	5.5	973,294	69,521	17.8
Kansas	7	3.1	901,772	128,825	21.2	18	7.9	1,267,966	70,443	29.9
Kentucky:										
Eastern	84	17.0	11,437,954	136,166	31.7	92	18.5	6,750,239	73,372	18.7
Western	25	15.2	3,373,128	134,925	37.4	23	14.0	1,659,521	72,153	18.4
Maryland	4	4.3	501,425	125,356	23.5	7	7.5	456,076	65,154	21.4
Michigan	1	11.1	145,664	145,664	17.5	2	22.2	144,317	72,159	17.4
Missouri						17	13.4	1,213,406	71,377	48.9
Montana	5	7.3	839,724	167,945	28.9	4	5.9	262,662	65,665	9.0
New Mexico	11	26.2	1,437,376	130,670	51.6	6	14.3	401,327	66,888	14.4
North Carolina										
North Dakota	3	2.3	410,312	136,771	34.2	3	2.3	200,889	66,963	16.7
Ohio	56	7.5	7,800,761	139,299	25.6	59	7.9	4,167,954	70,643	13.7
Oklahoma	3	3.2	365,600	121,867	15.7	8	8.5	537,375	67,172	23.1
Pennsylvania	196	9.2	27,239,447	138,977	20.9	210	9.9	15,177,822	72,275	11.6
South Dakota										
Tennessee	13	9.4	1,793,852	137,980	39.4	15	10.8	1,160,034	77,336	25.5
Texas	1	2.3	111,117	111,117	9.7	5	11.4	283,964	56,792	24.8
Utah	9	23.1	1,455,520	161,724	32.4	7	17.9	507,661	72,523	11.3
Virginia	6	5.2	864,469	144,078	8.1	20	17.4	1,453,980	72,699	13.6
Washington	5	8.7	649,222	129,844	24.5	6	10.3	413,483	68,914	15.6
West Virginia	216	17.7	30,971,374	143,386	30.5	236	19.3	16,677,689	70,668	16.4
Wyoming	22	35.5	3,224,150	146,552	47.7	9	14.5	709,698	78,855	10.5
	819	10.8	115,217,459	140,681	23.8	943	12.4	67,966,556	72,075	14.1

State	Class 4 (10,000 to 50,000 tons)				
	Mines		Production		
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage
Alabama	90	37.8	2,951,578	32,795	15.4
Alaska	1	12.5	35,134	35,134	35.3
Arkansas	28	32.6	699,768	24,992	48.2
Colorado	47	20.3	1,339,519	28,500	12.8
Illinois	88	18.0	2,085,227	23,696	3.0
Indiana	57	23.0	1,479,728	25,960	6.9
Iowa	49	19.1	1,275,907	26,039	23.4
Kansas	48	21.0	1,078,805	22,475	25.4
Kentucky:					
Eastern	142	28.6	3,684,213	25,945	10.2
Western	62	37.8	1,775,992	28,645	19.7
Maryland	37	39.8	1,020,423	27,579	47.8
Michigan	3	33.3	58,503	19,501	7.1
Missouri	40	31.5	988,748	24,719	39.9
Montana	8	11.8	194,793	24,349	6.7
New Mexico	7	16.7	167,941	23,992	6.0
North Carolina	2	100.0	57,094	28,547	100.0
North Dakota	17	12.9	355,578	20,916	29.6
Ohio	172	22.9	4,021,634	23,382	13.2
Oklahoma	45	47.9	1,237,363	27,497	53.1
Pennsylvania	591	27.9	14,139,085	23,924	10.8
Tennessee	56	40.2	1,405,597	25,100	30.8
Texas	31	70.4	706,379	22,786	61.5
Utah	4	10.3	123,360	30,840	2.8
Virginia	34	29.5	847,658	24,931	7.9
Washington	12	20.7	251,091	20,924	9.5
West Virginia	369	30.3	10,428,950	28,263	10.3
Wyoming	7	11.3	195,766	27,966	2.9
	2,047	27.0	52,605,834	25,699	10.9

TABLE 58.—*Number and production of commercial bituminous coal mines, by size classes, in 1924*—Continued

State	Class 5 (less than 10,000 tons)					Total		
	Mines		Production			Mines	Production (net tons)	
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage		Total	Average per mine
Alabama	51	21.4	221,142	4,336	1.2	238	19,130,184	80,379
Alaska	6	75.0	13,103	2,184	13.1	8	99,663	12,458
Arkansas	50	58.1	177,404	3,548	12.2	86	1,451,503	16,878
California, Idaho, Nebraska, and Oregon	9	100.0	16,953	1,884	100.0	9	16,953	1,884
Colorado	121	52.4	295,554	2,443	2.8	231	10,444,098	45,213
Georgia	1	50.0	2,000	2,000	2.7	2	74,947	37,474
Illinois	177	36.3	582,442	3,291	.8	488	68,323,281	140,007
Indiana	82	33.1	295,063	3,598	1.4	248	21,480,213	86,614
Iowa	178	69.5	465,594	2,616	8.5	256	5,468,450	21,361
Kansas	153	67.1	539,038	3,523	12.7	228	4,247,733	18,630
Kentucky:								
Eastern	132	26.6	476,893	3,613	1.3	496	36,127,133	72,837
Western	46	28.1	157,620	3,426	1.7	164	9,020,071	55,000
Maryland	45	48.4	155,779	3,462	7.3	93	2,133,703	22,943
Michigan	1	11.2	3,500	3,500	.4	9	831,020	92,335
Missouri	70	55.1	278,726	3,982	11.2	127	2,480,880	19,534
Montana	48	70.6	152,235	3,171	5.2	68	2,905,365	42,726
New Mexico	16	38.0	37,851	2,366	1.4	42	2,786,063	66,335
North Carolina						2	57,094	28,547
North Dakota	109	82.5	233,748	2,144	19.5	132	1,200,527	9,095
Ohio	420	56.0	1,307,791	3,114	4.3	750	30,473,007	40,631
Oklahoma	38	40.4	189,277	4,981	8.1	94	2,329,615	24,783
Pennsylvania	944	44.5	3,426,572	3,630	2.6	2,122	130,633,773	61,562
South Dakota	16	100.0	12,043	753	100.0	16	12,043	753
Tennessee	55	39.6	197,072	3,583	4.3	139	4,556,555	32,781
Texas	7	15.9	45,551	6,507	4.0	44	1,147,011	26,068
Utah	11	28.2	17,979	1,634	.4	39	4,488,157	115,081
Virginia	33	28.7	122,575	3,714	1.1	115	10,693,464	92,987
Washington	30	51.7	66,248	2,208	2.4	58	2,653,667	45,753
West Virginia	267	21.9	1,042,856	3,906	1.0	1,220	101,662,897	83,330
Wyoming	15	24.2	26,617	1,774	.4	62	6,757,468	108,991
	3,131	41.3	10,559,226	3,372	2.2	7,586	483,686,538	63,760

In 1924 and 1925, for the first time, the class 1 mines were subdivided into class 1A, producing 500,000 tons or more, and class 1B, producing from 200,000 to 500,000 tons. The results are shown in Tables 58 and 59. In 1925 there were 145 bituminous coal mines that produced 500,000 tons or more; their total output was 108,577,269 tons, an average of 748,809 tons per mine. Although constituting but 2 per cent of the total number of mines, they contributed 20.9 per cent of the production of the country. The mines of class 1B numbered 569 and contributed 32.8 per cent of the total output.

The market changes of 1923 to 1925 tended to throw more of the available business to the larger mines, and as a result the proportion of the total output produced by them increased (Table 60). In 1923, 47.2 per cent of the total production came from the class 1 mines. In 1925 this had increased to 53.7 per cent.

TABLE 59.—*Number and production of commercial bituminous coal mines, by size classes, in 1925*[1]

[No canvass of wagon mines was made]

State	Class 1A (more than 500,000 tons)					Class 1B (200,000 to 500,000 tons)				
	Mines		Production			Mines		Production		
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage
Alabama	4	1.7	3,188,855	797,214	15.9	19	7.9	5,522,176	290,641	27.6
Colorado						13	5.7	3,748,389	288,338	36.4
Illinois	48	10.3	40,030,743	833,974	59.8	48	10.3	15,143,535	315,490	22.6
Indiana	3	1.5	2,677,560	892,520	12.6	33	16.3	10,642,650	322,505	50.1
Iowa						5	2.4	1,502,196	300,439	31.8
Kansas						1	.4	307,281	307,281	6.8
Kentucky:										
Eastern	6	1.2	4,616,900	769,483	10.8	49	10.2	14,283,127	291,492	33.3
Western						15	9.3	3,651,931	243,462	30.0
Maryland						3	3.4	668,114	222,705	24.8
Michigan						2	20.0	462,520	231,260	57.2
Montana	3	5.8	1,761,331	587,110	57.9	1	1.9	225,236	225,236	7.4
New Mexico						2	5.3	730,469	365,235	28.6
Ohio	2	.3	1,321,512	660,756	4.7	32	5.0	10,429,508	325,922	37.3
Pennsylvania	48	2.4	35,954,239	749,047	26.3	132	6.7	41,989,360	318,101	30.7
Tennessee						3	2.7	781,147	260,382	14.3
Utah						10	24.4	3,119,343	311,934	66.5
Virginia	6	5.3	4,043,034	673,839	31.6	19	16.8	5,228,185	275,168	40.8
Washington						4	7.2	1,067,049	266,762	42.1
West Virginia	25	2.1	14,983,095	599,324	12.2	169	14.4	48,686,759	288,087	39.8
Wyoming						9	14.8	2,424,049	269,339	37.0
	145	2.0	108,577,269	748,809	20.9	569	8.0	170,613,024	299,847	32.8

State	Class 2 (100,000 to 200,000 tons)					Class 3 (50,000 to 100,000 tons)				
	Mines		Production			Mines		Production		
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage
Alabama	40	16.7	5,666,460	141,662	28.3	46	19.3	3,422,011	74,392	17.1
Arkansas						2	2.1	126,523	63,262	10.4
Colorado	20	8.7	3,001,579	150,079	29.1	26	11.4	1,961,617	75,447	19.0
Georgia						1	100.0	66,174	66,174	100.0
Illinois	45	9.7	6,622,226	147,161	9.9	33	7.1	2,536,923	76,876	3.8
Indiana	34	16.7	4,893,270	143,920	23.1	21	10.3	1,588,455	75,641	7.5
Iowa	7	3.4	1,073,077	153,297	22.8	10	4.8	786,186	78,619	16.7
Kansas	10	4.3	1,350,356	135,036	29.9	17	7.4	1,250,338	73,549	27.6
Kentucky:										
Eastern	94	19.6	13,263,371	141,100	30.9	91	19.0	6,578,897	72,296	15.3
Western	32	19.9	4,489,792	140,306	36.8	37	23.0	2,652,049	71,677	21.8
Maryland	3	3.4	385,003	128,334	14.3	9	10.2	752,881	83,653	27.9
Michigan	1	10.0	108,248	108,248	13.4	3	30.0	197,879	65,960	24.5
Missouri	6	3.9	701,655	116,943	26.0	9	5.8	701,791	77,977	26.1
Montana	3	5.8	503,536	167,845	16.5	3	5.8	242,234	80,745	8.0
New Mexico	6	15.8	902,459	150,410	35.3	10	26.3	765,693	76,569	30.0
North Dakota	4	2.6	577,278	144,320	43.6	2	1.3	112,366	56,183	8.5
Ohio	51	8.0	7,020,424	137,655	25.0	62	9.7	4,527,152	73,019	16.1
Oklahoma	2	2.0	296,815	148,408	12.8	10	10.0	719,698	71,970	30.9
Pennsylvania	176	8.9	24,752,206	140,638	18.1	221	11.2	15,795,556	71,473	11.5
Tennessee	18	16.2	2,625,221	145,846	48.1	15	13.5	951,735	63,449	17.5
Texas	1	2.7	129,646	129,646	12.9	1	2.7	51,466	51,466	5.1
Utah	8	19.5	1,145,076	143,135	24.4	3	7.3	227,169	75,723	4.9
Virginia	12	10.6	1,437,476	119,790	11.2	17	15.1	1,197,399	70,435	9.4
Washington	5	8.9	720,774	144,155	28.4	5	8.9	404,395	80,879	15.9
West Virginia	234	19.9	33,223,650	141,981	27.2	226	19.3	16,092,555	71,206	13.1
Wyoming	21	34.4	3,096,212	147,439	47.2	11	18.0	868,485	78,953	13.3
	833	11.6	117,985,810	141,640	22.7	891	12.5	64,577,627	72,478	12.4

[1] Note that this table represents mines, not companies, for which the showing would be very different.

TABLE 59.—*Number and production of commercial bituminous coal mines, by size classes, in 1925*—Continued

State	Class 4 (10,000 to 50,000 tons)					Class 5 (less than 10,000 tons)				
	Mines		Production			Mines		Production		
	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage	Number	Percentage	Total (net tons)	Average per mine (net tons)	Percentage
Alabama	73	30.5	2,014,374	27,594	10.1	57	23.9	190,519	3,342	1.0
Alaska	3	33.3	78,657	26,219	94.9	6	66.7	4,211	702	5.1
Arkansas	43	44.8	917,741	21,343	75.2	51	53.1	175,775	3,447	14.4
California, Idaho, and Oregon	1	20.0	10,000	10,000	79.2	4	80.0	2,625	656	20.8
Colorado	47	20.5	1,275,437	27,137	12.4	123	53.7	323,529	2,630	3.1
Illinois	73	15.6	1,875,379	25,690	2.8	219	47.0	700,553	3,199	1.1
Indiana	50	24.6	1,204,059	24,081	5.7	62	30.6	218,972	3,532	1.0
Iowa	44	21.3	970,371	22,054	20.6	141	68.1	383,013	2,716	8.1
Kansas	54	23.5	1,082,786	20,052	23.9	148	64.4	533,490	3,605	11.8
Kentucky:										
Eastern	134	27.9	3,673,522	27,414	8.6	106	22.1	466,296	4,399	1.1
Western	55	34.2	1,315,978	23,927	10.8	22	13.6	76,807	3,491	.6
Maryland	29	33.0	761,093	26,245	28.3	44	50.0	127,481	2,897	4.7
Michigan	2	20.0	29,401	14,701	3.6	2	20.0	10,185	5,093	1.3
Missouri	38	24.7	978,458	25,749	36.3	101	65.6	312,311	3,092	11.6
Montana	9	17.3	218,663	24,296	7.2	33	63.4	92,686	2,809	3.0
New Mexico	6	15.8	126,373	21,062	4.9	14	36.8	31,857	2,276	1.2
North Carolina	2	100.0	65,153	32,577	100.0					
North Dakota	14	9.2	340,382	24,313	25.7	132	86.9	294,594	2,232	22.2
Ohio	155	24.3	3,644,928	23,516	13.0	337	52.7	1,090,588	3,236	3.9
Oklahoma	48	48.0	1,120,023	23,334	48.2	40	40.0	189,304	4,733	8.1
Pennsylvania	652	33.0	15,602,866	23,931	11.4	745	37.8	2,833,792	3,804	2.0
South Dakota						17	100.0	14,447	850	100.0
Tennessee	37	33.3	933,316	25,225	17.1	38	34.3	162,592	4,279	3.0
Texas	32	86.5	807,894	25,247	80.1	3	8.1	19,369	6,456	1.9
Utah	4	9.8	142,800	35,700	3.0	16	39.0	55,954	3,497	1.2
Virginia	26	23.0	784,452	30,171	6.1	33	29.2	108,897	3,300	.9
Washington	11	19.6	242,267	22,024	9.5	31	55.4	103,405	3,336	4.1
West Virginia	321	27.4	8,556,996	26,657	7.0	198	16.9	837,904	4,232	.7
Wyoming	6	9.8	126,612	21,102	1.9	14	23.0	37,874	2,705	.6
	1,969	27.6	48,899,981	24,835	9.4	2,737	38.3	9,399,030	3,434	1.8

State	Total		
	Mines	Production (net tons)	
		Total	Average per mine
Alabama	239	20,004,395	83,700
Alaska	9	82,868	9,208
Arkansas	96	1,220,039	12,709
California, Idaho, and Oregon	5	12,625	2,525
Colorado	229	10,310,551	45,024
Georgia	1	66,174	66,174
Illinois	466	66,909,359	143,582
Indiana	203	21,224,966	104,556
Iowa	207	4,714,843	22,777
Kansas	230	4,524,251	19,671
Kentucky:			
Eastern	480	42,882,113	89,338
Western	161	12,186,557	75,693
Maryland	88	2,694,572	30,620
Michigan	10	808,233	80,823
Missouri	154	2,694,215	17,495
Montana	52	3,043,686	58,532
New Mexico	38	2,556,851	67,286
North Carolina	2	65,153	32,577
North Dakota	152	1,324,620	8,715
Ohio	639	28,034,112	43,872
Oklahoma	100	2,325,840	23,258
Pennsylvania	1,974	136,928,019	69,366
South Dakota	17	14,447	850
Tennessee	111	5,454,011	49,135
Texas	37	1,008,375	27,253
Utah	41	4,690,342	114,399
Virginia	113	12,799,443	113,269
Washington	56	2,537,890	45,319
West Virginia	1,173	122,380,959	104,332
Wyoming	61	6,553,232	107,430
	7,144	520,052,741	72,796

TABLE 60.—*Number and yearly output of commercial bituminous coal mines, by size classes, 1905, 1910, 1913, 1917–1925* [1]

[Exclusive of wagon mines]

Year	Class 1 (more than 200,000 tons) [2]	Class 2 (100,000 to 200,000 tons)	Class 3 (50,000 to 100,000 tons)	Class 4 (10,000 to 50,000 tons)	Class 5 (less than 10,000 tons)	Total
Number of mines:						
1905	411	612	808	1,514	1,715	5,060
1910	618	763	960	1,568	1,909	5,818
1913	694	837	959	1,558	1,728	5,776
1917	792	914	1,044	1,996	2,193	6,939
1918	821	929	1,198	2,636	2,735	8,319
1919	550	854	1,181	2,784	3,625	8,994
1920	701	1,031	1,279	3,160	2,750	8,921
1921	482	807	1,003	2,346	3,400	8,038
1922	416	848	1,084	3,139	3,812	9,299
1923	748	935	1,176	2,742	3,730	9,331
1924	646	819	943	2,047	3,131	7,586
1925	714	833	891	1,969	2,737	7,144
Net tons produced:						
1905	126,499,000	85,920,000	57,386,000	38,995,000	6,034,000	314,834,000
1910	191,519,000	107,052,000	68,858,000	42,282,000	6,561,000	416,272,000
1913	241,463,000	118,476,000	69,018,000	42,292,000	6,280,000	477,529,000
1917	285,366,000	129,486,000	74,894,000	51,596,000	8,824,000	550,166,000
1918	281,267,000	131,027,000	87,143,000	67,453,000	11,387,000	578,277,000
1919	174,848,000	120,926,000	84,625,000	71,334,000	13,198,000	464,931,000
1920	237,468,000	142,750,000	90,669,000	82,129,000	10,716,000	563,732,000
1921	162,438,000	115,607,000	71,160,000	56,099,000	10,618,000	415,922,000
1922	131,876,000	117,195,000	77,287,000	77,203,000	15,248,000	418,809,000
1923	265,869,000	130,804,000	84,342,000	68,769,000	13,639,000	563,423,000
1924	237,338,000	115,217,000	67,967,000	52,606,000	10,559,000	483,687,000
1925	279,190,000	117,986,000	64,578,000	48,900,000	9,399,000	520,053,000
Percentage of total number of mines:						
1905	8.1	12.1	16.0	29.9	33.9	100.0
1910	10.6	13.1	16.5	27.0	32.8	100.0
1913	12.0	14.5	16.6	27.0	29.9	100.0
1917	11.4	13.2	15.0	28.8	31.6	100.0
1918	9.8	11.2	14.4	31.7	32.9	100.0
1919	6.1	9.5	13.1	31.0	40.3	100.0
1920	7.9	11.6	14.3	35.4	30.8	100.0
1921	6.0	10.0	12.5	29.2	42.3	100.0
1922	4.5	9.1	11.7	33.7	41.0	100.0
1923	8.0	10.0	12.6	29.4	40.0	100.0
1924	8.5	10.8	12.4	27.0	41.3	100.0
1925	10.0	11.6	12.5	27.6	38.3	100.0
Percentage of total tonnage:						
1905	40.2	27.3	18.2	12.4	1.9	100.0
1910	46.0	25.7	16.5	10.2	1.6	100.0
1913	50.6	24.8	14.4	8.9	1.3	100.0
1917	51.9	23.5	13.6	9.4	1.6	100.0
1918	48.6	22.7	15.1	11.6	2.0	100.0
1919	37.6	26.0	18.2	15.4	2.8	100.0
1920	42.1	25.3	16.1	14.6	1.9	100.0
1921	39.1	27.8	17.1	13.5	2.5	100.0
1922	31.5	28.0	18.5	18.4	3.6	100.0
1923	47.2	23.2	15.0	12.2	2.4	100.0
1924	49.0	23.8	14.1	10.9	2.2	100.0
1925	53.7	22.7	12.4	9.4	1.8	100.0

[1] This table shows mines, not companies, and should not be confused with other tables that include country banks and many wagon mines shipping by rail.

[2] Figures for 1924 and 1925 include class 1A and 1B.

TABLE 61.—*Number of mines operating and price of bituminous coal f. o. b. mines, 1913, 1917–1925*

Year	Number of commercial bituminous mines in operation	Total number of bituminous mines in operation, including wagon mines	Average spot price f. o. b. mines (Coal Age)	Average sales realization per ton on all coal f. o. b. mines
1913	5,776	[1]	$1.23	$1.18
1917	6,939	10,634	3.25	2.26
1918	8,319	11,038	[2] 2.58	2.58
1919	8,994	12,409	2.59	2.49
1920	8,921	14,766	5.64	3.75
1921	8,038	[1]	2.55	2.89
1922	9,299	14,150	3.64	3.02
1923	9,331	11,715	2.77	2.68
1924	7,586	[1]	2.08	2.20
1925	7,144	[1]	2.06	2.04

[1] Not available.

[2] Price fixed by Fuel Administrator.

VALUE OF COAL PRODUCED

DEFINITION OF VALUES REPORTED

The value given in this report is the amount received at the mines f. o. b. cars, less selling expense, and the average value per ton is the average amount received, obtained by dividing the total value by the number of tons sold or produced. Coal used at the mines, coal coked by the producing company, and coal used in some other industry by that company—in all, forming a considerable part of the total output—is not sold, and the value placed upon it is either an estimate or the amount at which it is carried on the company's books. Either value is presumably the amount the coal would have brought if it had been sold or the amount other fuel for the purpose stated would have cost if it had been purchased. In other words, the values given represent returns to the operators for coal sold plus the estimated value of that not sold. The value thus fixed is more or less arbitrary and does not necessarily represent the current prices for coal sold commercially. Many mines are owned by consumers who take all or a great part of their output at nominal prices. The output of such "captive mines" is not known accurately, but it is probably between 20 and 25 per cent of the entire production. Even where the coal is actually sold large quantities may be moved on "cost-plus" contracts that provide for prices below the average spot prices in the field or the average prices received for coal delivered under ordinary contracts. The figures in the following tables, therefore, do not necessarily show prices or even an average of the prices of coal at the mines. Taken over a period of years, however, they do furnish an index to the rise and fall in the value of coal.

The computed "average value per ton" is thus affected by the value placed by the operator upon coal used at the mine but not shipped. In order to ascertain how large an influence the inclusion of this noncommercial coal might have upon the average, the operators were requested for several years to give separate statements of value for coal loaded at the mines for shipment, for sales to local trade, and for mine fuel and coal made into beehive coke. It was found, however, that for practical purposes the average value of all the coal produced may be accepted as a measure of the average value of the coal shipped. The values placed by operators on mine fuel and upon the coal coked were generally somewhat less than the average amounts received for the coal shipped, but the quantities to which these lower values applied were so much smaller than the quantity shipped that they affected only slightly the average for all coal produced.

ESTIMATES OF VALUE INCLUDED IN THE STATISTICS

If an operator who is known to have produced coal during the year will make no report of the value of his product to the Bureau of Mines, an estimate of the value is included in the total in order to make it complete. These estimates are based on the average for each county as obtained from all reports of the operators in the county that did specify value.

The percentage of the total value of the product in each State in 1925 represented in this report by estimates is shown in the following table:

TABLE 62.—*Percentage of total value of bituminous coal produced by commercial operators that is represented by estimates, by States, 1923–1925*

State	1923	1924	1925	State	1923	1924	1925
Alabama	8.3	7.9	28.5	North Dakota	.9	1.6	3.6
Arkansas	15.5	6.5	25.4	Ohio	3.4	2.4	5.0
Colorado	7.1	5.1	3.3	Oklahoma	18.4	19.5	21.0
Idaho			100.0	Pennsylvania	3.4	2.8	3.7
Illinois	5.8	2.2	2.1	South Dakota	1.4	.7	33.3
Indiana	9.4	5.5	4.5	Tennessee	6.8	1.1	11.1
Iowa	.2	22.8	24.9	Texas	21.0	23.5	47.0
Kansas	12.5	12.8	14.0	Utah	.2	.04	
Kentucky	14.1	6.7	9.5	Virginia	3.2	.4	4.1
Maryland	3.5	11.7	1.5	Washington	16.3	31.0	.9
Michigan		.4		West Virginia	8.1	5.1	5.2
Missouri	6.8	2.5	.6	Wyoming	3.3	5.2	1.5
Montana	2.4	.4	1.1	Other States		25.8	
New Mexico	.3	.1					
North Carolina	58.3			United States	6.2	4.6	6.0

Of the $1,060,402,000 given as the total value of bituminous coal at the mines in 1925, $63,211,000, or 6 per cent, represents estimates of the value of the output of commercial mines. In the average for the whole country the proportion estimated is not large enough to introduce an appreciable error, but in the figures for some of the States the error may be more serious.

TABLE 63.—*Production and value of anthracite and bituminous coal, by States, 1924–25*

State	1924			1925		
	Net tons	Value		Net tons	Value	
		Total	Average per ton		Total	Average per ton
Alabama	19,130,184	$44,756,000	$2.34	20,004,395	$42,442,000	$2.12
Alaska	99,663	560,000	5.62	82,868	405,000	4.89
Arkansas	1,451,503	5,898,000	4.06	1,220,039	4,829,000	3.96
California, Idaho, Nebraska, and Oregon [1]	16,953	71,000	4.19	12,625	60,000	4.75
Colorado	10,444,098	31,863,000	3.05	10,310,551	30,322,000	2.94
Georgia	74,947	271,000	3.62	66,174	220,000	3.32
Illinois	68,323,281	155,260,000	2.27	66,909,359	146,492,000	2.19
Indiana	21,480,213	46,453,000	2.16	21,224,966	42,884,000	2.02
Iowa	5,468,450	18,097,000	3.31	4,714,843	14,807,000	3.14
Kansas	4,247,733	12,854,000	3.03	4,524,251	13,013,000	2.88
Kentucky	45,147,204	84,733,000	1.88	55,068,670	94,825,000	1.72
Maryland	2,133,703	4,629,000	2.17	2,694,572	5,312,000	1.97
Michigan	831,020	3,602,000	4.33	808,233	3,391,000	4.20
Missouri	2,480,880	8,154,000	3.29	2,694,215	8,281,000	3.07
Montana	2,905,365	8,596,000	2.96	3,043,686	7,879,000	2.59
New Mexico	2,786,063	9,774,000	3.51	2,556,851	8,611,000	3.37
North Carolina	57,094	224,000	3.92	65,153	283,000	4.34
North Dakota	1,200,527	2,473,000	2.06	1,324,620	2,445,000	1.85
Ohio	30,473,007	62,011,000	2.03	28,034,112	54,057,000	1.93
Oklahoma	2,329,615	8,590,000	3.69	2,325,840	7,667,000	3.30
Pennsylvania, bituminous	130,633,773	295,164,000	2.26	136,928,019	287,899,000	2.10
South Dakota	12,043	36,000	2.99	14,447	42,000	2.91
Tennessee	4,556,555	9,711,000	2.13	5,454,011	10,077,000	1.85
Texas	1,147,011	1,721,000	1.50	1,008,375	1,566,000	1.55
Utah	4,488,157	12,057,000	2.69	4,690,342	11,991,000	2.56
Virginia	10,693,464	21,823,000	2.04	12,799,443	23,496,000	1.84
Washington	2,653,667	9,689,000	3.65	2,537,890	9,176,000	3.62
West Virginia	101,662,897	185,229,000	1.82	122,380,959	209,655,000	1.71
Wyoming	6,757,468	18,327,000	2.71	6,553,232	18,275,000	2.79
Total bituminous	483,686,538	1,062,626,000	2.20	520,052,741	1,060,402,000	2.04
Pennsylvania anthracite	87,926,862	477,231,000	5.43	61,817,149	327,665,000	5.30
Grand total	571,613,400	1,539,857,000	2.69	581,869,890	1,388,067,000	2.38

[1] No production in Nebraska in 1925.

AVERAGE VALUE PER TON

TABLE 64.—*Average value per net ton of coal at the mines, 1880–1925*

Year	Anthracite [1]	Bituminous	Year	Anthracite [1]	Bituminous	Year	Anthracite [1]	Bituminous
1880	$1.47	$1.25	1896	$1.50	$0.83	1912	$2.11	$1.15
1881	2.01	1.12	1897	1.51	.81	1913	2.13	1.18
1882	2.01	1.12	1898	1.41	.80	1914	2.07	1.17
1883	2.01	1.07	1899	1.46	.87	1915	2.07	1.13
1884	1.79	.94	1900	1.49	1.04	1916	2.30	1.32
1885	2.00	1.13	1901	1.67	1.05	1917	2.85	2.26
1886	1.95	1.05	1902	1.84	1.12	1918	3.40	2.58
1887	2.01	1.11	1903	2.04	1.24	1919	4.14	2.49
1888	1.91	1.00	1904	1.90	1.10	1920	4.85	3.75
1889	1.44	.99	1905	1.83	1.06	1921	5.00	2.89
1890	1.43	.99	1906	1.85	1.11	1922	5.01	3.02
1891	1.46	.99	1907	1.91	1.14	1923	5.43	2.68
1892	1.57	.99	1908	1.90	1.12	1924	5.43	2.20
1893	1.59	.96	1909	1.84	1.07	1925	5.30	2.04
1894	1.51	.91	1910	1.90	1.12			
1895	1.41	.86	1911	1.94	1.11			

[1] Averages for anthracite represent amounts per net ton and include all coal produced.

TABLE 65.—*Average value per net ton of coal at the mines, by States, 1917–1925*

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	
									Average	Increase or decrease
Alabama	$2.27	$2.85	$2.96	$3.65	$3.08	$2.34	$2.52	$2.34	$2.12	−$0.22
Alaska	4.92	5.45	5.66	5.83	6.46	5.43	6.30	5.62	4.89	−.73
Arkansas	2.56	3.67	3.70	4.56	4.37	4.14	4.01	4.06	3.96	−.10
California [1]	2.30	2.70	3.38	4.36	4.66	3.87	3.94	4.19	4.75	+.56
Colorado	2.22	2.69	2.78	3.49	3.55	3.16	3.22	3.05	2.94	−.11
Georgia	2.53	3.59	3.71	5.00	2.14	4.06	4.32	3.62	3.32	−.30
Illinois	1.88	2.32	2.30	3.08	2.74	2.89	2.50	2.27	2.19	−.08
Indiana	1.99	2.29	2.22	3.16	2.57	2.85	2.48	2.16	2.02	−.14
Iowa	2.35	3.02	3.09	3.94	3.81	3.72	3.59	3.31	3.14	−.17
Kansas	2.31	2.91	3.05	3.87	3.85	3.66	3.21	3.03	2.88	−.15
Kentucky	2.17	2.55	2.46	4.11	2.69	3.02	2.54	1.88	1.72	−.16
Maryland	2.46	2.77	2.73	4.63	3.61	3.37	3.02	2.17	1.97	−.20
Michigan	3.22	3.83	3.88	4.93	4.87	5.05	4.73	4.33	4.20	−.13
Missouri	2.43	3.02	3.21	4.16	3.92	3.81	3.40	3.29	3.07	−.22
Montana	2.11	2.53	2.67	3.16	3.26	3.19	3.07	2.96	2.59	−.37
New Mexico	1.86	2.68	3.11	3.68	3.91	3.49	3.66	3.51	3.37	−.14
North Carolina		4.75	3.84	7.02	5.76	4.94	3.66	3.92	4.34	+.42
North Dakota	1.80	2.45	2.50	2.87	2.69	2.65	2.36	2.06	1.85	−.21
Ohio	2.48	2.58	2.22	3.82	2.65	3.23	2.43	2.03	1.93	−.10
Oklahoma	2.81	3.64	3.83	4.80	4.62	4.11	3.77	3.69	3.30	−.39
Oregon	3.38	2.81	3.40	4.49	(1)	(1)	(1)	(1)	(1)	(1)
Pennsylvania, bituminous	2.44	2.59	2.42	3.77	2.78	3.11	2.75	2.26	2.10	−.16
South Dakota	2.90	2.80	3.17	3.60	2.81	2.84	2.41	2.99	2.91	−.08
Tennessee	2.19	2.83	2.77	4.02	3.35	2.89	2.73	2.13	1.85	−.28
Texas	1.77	2.63	2.69	3.75	2.64	2.32	1.82	1.50	1.55	+.05
Utah	2.07	2.71	2.76	3.22	3.35	3.14	2.89	2.69	2.56	−.13
Virginia	2.00	2.51	2.55	3.99	3.06	2.58	2.76	2.04	1.84	−.20
Washington	2.68	3.46	3.58	3.88	4.03	3.98	3.72	3.65	3.62	−.03
West Virginia	2.32	2.56	2.49	4.34	2.84	2.93	2.65	1.82	1.71	−.11
Wyoming	1.93	2.39	2.60	2.98	3.24	3.04	2.76	2.71	2.79	+.08
Total bituminous	2.26	2.58	2.49	3.75	2.89	3.02	2.68	2.20	2.04	−.16
Pennsylvania anthracite [2]	2.85	3.40	4.14	4.85	5.00	5.01	5.43	5.43	5.30	−.13

[1] California includes Idaho, 1917–1925; Nebraska, 1924; and Oregon, 1921–1925.
[2] These values represent amounts per net ton and include all coal produced.

AVERAGE EXPORT PRICES

TABLE 66.—*Average value per net ton of bituminous coal exported from the United States to Canada and to all other destinations, by months, 1920–1925*

[Computed from records of Bureau of Foreign and Domestic Commerce. Figures represent value at port, including transportation, and are therefore affected by changes in freight rates as well as f. o. b. mine prices. They include, of course, both spot and contract shipments. Data for 1902 to 1918 were published in "Coal in 1923," p. 624 and data for 1919 in "Coal in 1924," p. 507]

Month	1920		1921		1922		1923		1924		1925	
	Canada	Overseas and all others	Canada	Overseas and all others	Canada	Overseas and all others	Canada	Overseas and all others	Canada	Overseas and all others	Canada	Overseas and all others
January	$3.77	$5.72	$5.73	$7.95	$4.34	$5.83	$5.61	$6.00	$4.73	$4.55	$4.31	$4.13
February	3.77	5.83	5.39	7.38	4.74	5.48	5.80	5.96	4.64	4.49	4.42	4.25
March	3.78	5.97	5.29	7.09	4.68	5.05	5.77	5.75	4.52	4.45	3.98	4.18
April	4.02	6.55	4.71	6.60	4.03	4.88	5.38	5.98	4.40	4.41	3.98	4.11
May	4.13	7.29	4.39	6.19	4.01	4.83	4.70	5.78	4.01	4.47	3.72	4.06
June	4.69	8.62	3.94	5.91	4.55	5.73	4.51	5.18	3.66	4.46	3.85	4.10
July	5.56	10.84	3.98	6.21	4.79	5.33	4.40	5.10	3.68	4.48	3.77	4.06
August	5.95	12.01	3.98	6.16	6.09	5.69	4.35	4.92	3.83	4.37	3.84	4.08
September	6.00	11.82	4.12	6.43	5.99	5.93	4.50	5.04	3.76	4.19	3.61	4.28
October	6.06	12.20	4.06	6.01	5.56	6.22	4.47	4.69	3.91	4.24	3.72	4.23
November	5.90	11.12	4.31	5.75	5.78	5.69	4.39	4.59	4.17	4.32	3.79	4.25
December	5.83	9.28	4.13	5.75	5.72	5.92	4.59	4.45	4.16	4.27	3.77	4.38
Average	5.36	9.75	4.42	6.51	5.30	5.39	4.76	5.30	4.06	4.40	3.84	4.16

SPOT PRICES

The figures of average value collected by the Bureau of Mines are a composite of business covered by contract or trade connections of long standing at stable prices and business on the "open market," termed by the trade "spot sales." The percentage of coal moving under contract varies greatly from time to time and from district to district. There are no exact statistics of the relative proportions of spot and contract shipments, but it has been frequently stated that under ordinary conditions from 70 to 75 per cent of the total output moves under contract.

Concerning the prices of contract coal little information is available. The trade quotations deal rather with the current spot price f. o. b. mine. The spot price reflects the momentary condition of the market, as interpreted by the buyer seeking low prices, on the one hand, and by the seller attempting to place his coal at the maximum profit, on the other. Much significance, therefore, attaches to the course of spot prices as an index to the state of trade. The spot price should not be taken, however, as a measure of the average profit of the coal producer. The relation between the spot price and the average value of all coal f. o. b. mines for the last 20 years is shown in Table 67. Table 68 gives the average spot price of bituminous coal f. o. b. mine for each month of the years 1906 to 1925.

TABLE 67.—*Average spot price and average amount received per ton for bituminous coal, 1906–1925*

Year	Coal Age's average spot price	Average amount received	Difference	Year	Coal Age's average spot price	Average amount received	Difference
1906	$1.21	$1.11	+$0.10	1917	$3.25	$2.26	+$0.99
1907	1.18	1.14	+.04	1918	2.58	2.58	
1908	1.05	1.12	−.07	1919	2.59	2.49	+.10
1909	1.04	1.07	−.03	1920	5.64	3.75	+1.89
1910	1.23	1.12	+.11	1921	2.55	2.89	−.34
1911	1.07	1.11	−.04	1922	3.64	3.02	+.62
1912	1.21	1.15	+.06	1923	2.77	2.68	+.09
1913	1.23	1.18	+.05	1924	2.08	2.20	−.12
1914	1.14	1.17	−.03	1925	2.06	2.04	−.02
1915	1.12	1.13	−.01				
1916	1.85	1.32	+.53	Average, 20 yrs.	2.02	1.83	−.19

TABLE 68.—*Monthly average spot price of bituminous coal f. o. b. mines, 1906–1925, as published by Coal Age*

[Figures are average of trade-journal quotations on 14 coals representative of nearly 90 per cent of the bituminous output of the United States, weighted, first, with respect to the proportions each of slack, prepared, and run of mine normally shipped, and, second, with respect to the tonnage of each normally produced. For 1919 to 1925 the figures are those published currently by Coal Age, based upon the reports of its field correspondents. For 1913 to 1918 they are taken from Prices of Coal and Coke, by C. E. Lesher, published in 1919 as a chapter of Mineral Resources of the United States, 1918, and also separately by the Fuel Administration and the War Industries Board, modified slightly, however, to permit comparison with the postwar quotations. For 1906 to 1912 they are taken from a study by F. G. Tryon and W. F. McKenney, compiled in as nearly the same way as the trade-journal quotations available permit, and representing 12 or 14 coals covered by the later series]

Month	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
January	$1.10	$1.28	$1.09	$1.06	$1.24	$1.16	$1.14	$1.46	$1.21	$1.13
February	1.09	1.21	1.07	1.05	1.23	1.11	1.22	1.22	1.16	1.12
March	1.27	1.14	1.05	1.04	1.25	1.08	1.64	1.17	1.17	1.09
April	1.46	1.12	1.05	1.05	1.26	1.06	1.30	1.17	1.16	1.08
May	1.21	1.11	1.03	1.03	1.19	1.05	1.11	1.15	1.16	1.07
June	1.14	1.10	1.03	1.02	1.18	1.05	1.09	1.14	1.12	1.07
July	1.06	1.10	1.02	1.00	1.18	1.03	1.04	1.18	1.12	1.05
August	1.11	1.13	1.04	1.00	1.20	1.02	1.05	1.22	1.13	1.07
September	1.15	1.20	1.06	1.01	1.32	1.03	1.09	1.23	1.11	1.10
October	1.29	1.30	1.05	1.04	1.27	1.04	1.21	1.29	1.13	1.12
November	1.30	1.29	1.05	1.09	1.23	1.09	1.30	1.31	1.10	1.17
December	1.32	1.15	1.04	1.09	1.22	1.09	1.29	1.26	1.11	1.33
Average	1.21	1.18	1.05	1.04	1.23	1.07	1.21	1.23	1.14	1.12

Month	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
January	$1.53	$4.15	$2.48	$2.57	$2.57	$3.26	$2.25	$4.38	$2.21	$2.10
February	1.40	4.18	2.53	2.49	2.58	2.77	2.20	3.59	2.25	2.04
March	1.27	3.89	2.58	2.47	2.58	2.63	2.12	3.20	2.15	1.99
April	1.24	3.21	2.64	2.43	3.85	2.62	2.24	2.84	2.07	1.95
May	1.21	4.14	2.67	2.38	4.59	2.68	3.11	2.68	2.04	1.97
June	1.26	4.00	2.57	2.40	7.18	2.52	3.31	2.56	2.03	1.95
July	1.22	3.17	2.58	2.47	8.24	2.40	4.67	2.40	1.98	1.93
August	1.30	3.24	2.58	2.76	9.51	2.42	6.13	2.39	1.99	2.04
September	1.57	2.02	2.58	2.91	8.52	2.37	5.08	2.46	2.02	2.18
October	2.26	2.02	2.58	3.09	7.78	2.33	4.48	2.28	2.10	2.13
November	3.87	2.48	2.58	2.57	5.87	2.35	4.11	2.25	2.06	2.26
December	4.01	2.48	2.58	2.58	4.38	2.26	4.05	2.18	2.06	2.19
Average	1.85	3.25	2.58	2.59	5.64	2.55	3.64	2.77	2.08	2.06

BITUMINOUS COAL LOADED FOR SHIPMENT BY RAILROADS AND WATERWAYS

Table 69 was compiled by the Bureau of Mines from replies of mine operators to the following question:

Railroads or waterways on which product was first loaded for shipment:
Name of road or waterway—
(Give shipments over each road separately.)

Tons

The information is complete, all operations of which the Bureau of Mines has record as producing in 1925 being accounted for. It shows a total of 477,172,812 net tons loaded at mines for shipment. The remainder of the 520,052,741 tons produced consists of mine fuel, coal coked at mines, coal loaded direct into locomotive tenders at tipple, and local sales.

As these statistics include nonrevenue railroad fuel they may differ from those compiled by the railroad companies, which often show only revenue freight and include coal received from connecting lines or coal shipped off the Lake docks as well as that originating at mines on the lines reporting.

Where the road serving a district is a subsidiary of a larger road, some operators may report their coal as loaded on the subsidiary and others as loaded on the parent system. In general, the figures shown here are given under the name reported by the operator, and the bureau does not attempt to combine them under the name of the larger system, believing that such combination can best be made by the persons using the figures, who are usually familiar with coal-traffic problems. To approximate the total for the Southern system, for example, the reader should add to the total shown for the Southern Railway the figures of the Alabama Great Southern; Northern Alabama; Cincinnati, New Orleans & Texas Pacific; and Harriman & Northeastern lines. If such combination is made, the total will usually be found to check reasonably with the statistics issued by such railroads as keep records of total coal originated.

A few subsidiaries only have been consolidated under the name of the parent road. The shipments over the Coal & Coke Railroad have been included under the Baltimore & Ohio, and those over the Vandalia, the Pittsburgh, Cincinnati, Chicago & St. Louis, the Pennsylvania Co., the Ohio River & Western, and the Wheeling Terminal have been included under the Pennsylvania system. The Chicago, Terre Haute & Southeastern, over which operators of Indiana reported shipping 5,199,000 tons in 1920, was leased in 1921 by the Chicago, Milwaukee & St. Paul Railway, and the two are shown combined for 1925 under the name of the latter road.

Coal loaded at mines of the Tennessee Coal, Iron & Railroad Co. is here shown under the name of that company rather than under the Birmingham Southern, the corporate designation of its railroad subsidiary. The figures for the Chicago & Eastern Illinois Railroad include coal loaded in cars of the Elgin, Joliet & Eastern and moved by the latter road over the rails of the Chicago & Eastern Illinois under a trackage agreement.

The quantities shown in the following table as shipped by waterways do not all agree with statistics on river traffic published by the United States Engineer Office. The shipments of coal on Monongahela River, according to the United States Engineer Office at Pittsburgh, amounted to 18,374,000 tons in 1925. The records of the engineer office should be accepted as a correct measure of the river traffic. The differences between these records and the reports of the operators to the Bureau of Mines are due to various causes, in part to the fact that shipments of coal loaded in cars at the mines and later transferred to boats would be classified by the bureau as "rail" and by the engineer office as "river."

TABLE 69.—*Bituminous coal loaded for shipment by railroads and waterways in 1925, in net tons*

Route	State	Quantity	
		By State	Total for route
RAILROADS			
Alabama Central	Alabama	80,933	80,933
Alabama Great Southern	do	33,617	33,617
Alaska	Alaska	77,830	77,830
Alton & Southern	Illinois	59,796	59,796
Arkansas Western	Arkansas	4,390	4,390
Artemus Jellico	Kentucky	120,000	120,000
Atchison, Topeka & Santa Fe	Colorado	661,896	4,048,733
	Illinois	395,167	
	Kansas	898,557	
	Missouri	410,865	
	New Mexico	1,575,133	
	Oklahoma	107,115	
Atlanta, Birmingham & Atlantic	Alabama	26,805	26,805
Ballard & Thompson	Utah	86,573	86,573
Baltimore & Ohio	Illinois	1,810,301	37,330,515
	Indiana	255,923	
	Maryland	43,518	
	Ohio	7,182,537	
	Pennsylvania	9,098,748	
	West Virginia	18,939,488	
Bessemer & Lake Erie	Pennsylvania	2,959,946	2,959,946
Big Sandy & Cumberland	Kentucky	12,860	12,860
Big Sandy & Kentucky River	do	185,406	185,406
Birmingham Flat Top	Alabama	466,014	466,014
Buffalo & Susquehanna	Pennsylvania	620,986	620,986
Buffalo Creek & Gauley	West Virginia	689,081	689,081
Buffalo, Rochester & Pittsburgh	Pennsylvania	4,802,225	4,802,225
Cambria & Indiana	do	2,899,622	2,899,622
Campbell's Creek	West Virginia	572,751	572,751
Carbon County	Utah	326,599	326,599
Caseyville	Illinois	42,876	42,876
Castleman Valley	Maryland	768	768
Central of Georgia	Alabama	1,258,283	1,313,815
	Georgia	55,532	
Chaffee	Maryland	109,070	109,070
Cheat Haven & Bruceton	West Virginia	213,620	213,620
Chesapeake & Ohio, (includes Ashland Coal & Iron Co., Long Fork, and Millers Creek).	Kentucky	8,328,221	49,948,673
	West Virginia	41,620,452	
Cheswick & Harmar	Pennsylvania	31,598	31,598
Chicago & Alton	Illinois	2,970,285	3,020,767
	Missouri	50,482	
Chicago & Eastern Illinois	Illinois	4,033,586	7,417,056
	Indiana	3,383,470	
Chicago & Illinois Midland	Illinois	2,993,274	2,993,274
Chicago & North Western	do	3,512,376	4,113,684
	Iowa	532,028	
	Wyoming	69,280	
Chicago, Burlington & Quincy	Colorado	478,342	14,896,366
	Illinois	12,440,223	
	Iowa	440,390	
	Missouri	213,083	
	Wyoming	1,324,328	
Chicago Great Western	Iowa	47,830	47,830
Chicago, Indianapolis & Louisville	Indiana	1,331,712	1,331,712
Chicago, Milwaukee & St. Paul	Illinois	350,044	8,450,844
	Indiana	6,167,792	
	Iowa	732,936	
	Missouri	120,700	
	Montana	955,685	
	North Dakota	101,110	
	South Dakota	5,180	
	Washington	17,397	
Chicago, Peoria & St. Louis	Illinois	663,529	663,529
Chicago, Rock Island & Gulf	Texas	20,055	20,055
Chicago, Rock Island & Pacific	Colorado	3,545	2,006,402
	Illinois	41,406	
	Iowa	1,214,018	
	Oklahoma	747,433	
Cincinnati, Indianapolis & Western	Illinois	25,375	155,493
	Indiana	130,118	
Cincinnati, New Orleans & Texas Pacific	Tennessee	56,060	56,060
Cleveland, Cincinnati, Chicago & St. Louis	Illinois	5,760,770	6,909,550
	Indiana	1,148,780	
Clinchfield	Kentucky	30,312	2,593,610
	Virginia	2,563,298	
Colfax Northern	Iowa	5,615	5,615
Colorado & Southeastern	Colorado	371,813	371,813
Colorado & Southern	do	2,430,435	2,430,435
Colorado & Wyoming	do	248,252	248,252
Conemaugh & Black Lick	Pennsylvania	120,914	120,914

TABLE 69.—*Bituminous coal loaded for shipment by railroads and waterways in 1925, in net tons*—Continued

Route	State	Quantity	
		By State	Total for route
RAILROADS—continued			
Crystal River & San Juan	Colorado	1,600	1,600
Cumberland & Manchester	Kentucky	101,887	101,887
Cumberland & Pennsylvania	Maryland	1,289,063	1,289,063
Dardanelle & Russellville	Arkansas	17,390	17,390
Dents Run	Pennsylvania	53,011	53,011
Denver & Intermountain	Colorado	89,923	89,923
Denver & Rio Grande Western	do	2,885,420	5,194,594
	New Mexico	19,886	
	Utah	2,289,288	
Denver & Salt Lake	Colorado	951,400	951,400
Des Moines & Central Iowa	Iowa	193,423	193,423
Detroit, Toledo & Ironton	Ohio	11,890	11,890
East Broad Top R. R. & Coal Co	Pennsylvania	669,658	669,658
Eastern Kentucky	Kentucky	5,364	5,364
Eastern Railway & Lumber Co	Washington	17,427	17,427
East St. Louis & Suburban	Illinois	36,239	36,239
Elgin, Joliet & Eastern	do	48,405	48,405
El Paso & Southwestern	New Mexico	656,394	656,394
Erie	Ohio	68,920	1,677,977
	Pennsylvania	1,609,057	
Evansville & Ohio Valley	Indiana	62,720	62,720
Evansville, Indianapolis & Terre Haute	do	2,191,643	2,191,643
Evansville, Suburban & Newburgh	do	55,859	55,859
Federal Valley	Ohio	21,121	21,121
Fort Dodge, Des Moines & Southern	Iowa	21,543	21,543
Fort Smith & Western	Oklahoma	75,002	75,002
Fort Smith, Subiaco & Rock Island	Arkansas	23,642	23,642
Galesburg & Great Eastern	Illinois	1,095	1,095
Galveston, Harrisburg & San Antonio	Texas	15,466	15,466
Great Northern	Montana	408,489	1,003,688
	North Dakota	342,078	
	Washington	253,121	
Greenbrier & Eastern	West Virginia	800,248	800,248
Harriman & Northeastern	Tennessee	283,669	283,669
Hartland	West Virginia	148,089	148,089
Hocking Valley	Ohio	1,487,388	1,487,388
Houston & Texas Central	Texas	47,145	47,145
Houston East & West Texas	do	111,910	111,910
Huntingdon & Broad Top Mountain	Pennsylvania	557,222	557,222
Illinois Central	Alabama	149,440	18,590,892
	Illinois	11,298,622	
	Indiana	306,899	
	Kentucky	6,835,931	
Illinois Terminal	Illinois	28,885	28,885
Illinois Traction	do	983,018	983,018
Indiana County Street Railway	Pennsylvania	930	930
Indian Creek Valley	do	585,287	585,287
International & Great Northern	Texas	160,631	160,631
Interstate	Kentucky	85,689	2,872,427
	Virginia	2,786,738	
Iowa Southern Utilities Co	Iowa	90,038	90,038
Jefferson Southwestern	Illinois	415,415	415,415
Johnstown & Stony Creek	Pennsylvania	52,524	52,524
Joplin & Pittsburg	Kansas	47,336	47,336
Kanawha & Michigan	Ohio	951,883	1,013,083
	West Virginia	61,200	
Kanawha & West Virginia	do	50,849	50,849
Kanawha Central	do	183,744	183,744
Kanawha, Glen Jean & Eastern	do	994,406	994,406
Kansas City, Clay County & St. Joseph	Missouri	1,305	1,305
Kansas City Southern	Kansas	335,729	751,988
	Missouri	357,113	
	Oklahoma	59,146	
Kansas, Oklahoma & Gulf	do	198,314	198,314
Kentucky & Tennessee	Kentucky	801,750	801,750
Lake Erie, Franklin & Clarion	Pennsylvania	328,874	328,874
Laramie, North Park & Western	Colorado	58,259	58,259
Lenox	Kentucky	5,240	5,240
Ligonier Valley	Pennsylvania	390,126	390,126
Litchfield & Madison	Illinois	778,594	778,594
Louisiana Railway & Navigation Co. of Texas	Texas	51,654	51,654
Louisville & Nashville	Alabama	4,377,601	35,173,384
	Illinois	322,400	
	Kentucky	29,256,812	
	Tennessee	945,982	
	Virginia	270,589	
Louisville, Henderson & St. Louis	Kentucky	103,588	103,582
Marion & Eastern	Illinois	148,812	148,818

TABLE 69.—*Bituminous coal loaded for shipment by railroads and waterways in 1925, in net tons*—Continued

Route	State	Quantity	
		By State	Total for route
RAILROADS—continued			
Michigan Central	Michigan	367,481	367,481
Midland Valley	Arkansas	212,155	433,328
	Oklahoma	221,173	
Minneapolis & St. Louis	Illinois	521,714	722,563
	Iowa	200,849	
Minneapolis, St. Paul & Sault Ste. Marie	North Dakota	175,271	175,271
Missouri-Illinois	Illinois	394,686	394,686
Missouri, Kansas & Texas	Kansas	129,613	626,824
	Missouri	20,184	
	Oklahoma	315,850	
	Texas	161,177	
Missouri Pacific	Arkansas	726,794	7,099,647
	Illinois	4,541,974	
	Kansas	1,189,120	
	Missouri	641,759	
Mobile & Ohio	Alabama	647,565	1,090,456
	Illinois	442,891	
Monongahela	Pennsylvania	4,126,910	11,386,992
	West Virginia	7,260,082	
Monongahela Valley Traction Co	Ohio	592	592
Montana	Arkansas	57,996	57,996
Montana, Wyoming & Southern	Montana	404,975	404,975
Montour	Pennsylvania	2,171,265	2,171,265
Morehead & North Fork	Kentucky	686	686
Morgan & Fentress	Tennessee	17,927	17,927
Morgantown & Kingwood	West Virginia	42,651	42,651
Nashville, Chattanooga & St. Louis	Alabama	310	958,794
	Tennessee	958,484	
National Coal Railroad Co	Utah	9,333	9,333
New Mexico Central	New Mexico	730	730
New Mexico Midland	do	73,951	73,951
New York Central	Ohio	3,219,468	11,194,712
	Pennsylvania	5,849,124	
	West Virginia	2,126,120	
New York, Chicago & St. Louis	Illinois	620,126	624,142
	Indiana	4,016	
Norfolk & Western	Kentucky	4,829,369	38,587,595
	Virginia	3,501,804	
	West Virginia	30,256,422	
Norfolk Southern	North Carolina	58,160	58,160
Northern Alabama	Alabama	476,137	476,137
Northern Ohio Traction & Light Co	Ohio	10,546	10,546
Northern Pacific	Montana	1,089,025	2,863,303
	North Dakota	417,464	
	Washington	1,356,814	
Norton & Northern	Virginia	120,146	120,146
Ohio & Kentucky	Kentucky	17,253	17,253
Oklahoma City-Ada-Atoka	Oklahoma	23,737	23,737
Oneida & Western	Tennessee	1,492	1,492
Oregon Short Line	Idaho	1,000	1,285,660
	Wyoming	1,284,660	
Oregon-Washington Railroad & Navigation Co	Washington	254,333	254,333
Pacific Coast	do	401,636	401,636
Pennsylvania (includes Ohio River & Western, Pittsburgh, Cincinnati, Chicago & St. Louis, and Pittsburgh, Virginia & Charleston).	Illinois	846,023	59,842,205
	Indiana	3,991,962	
	Maryland	378	
	Ohio	4,487,110	
	Pennsylvania	49,345,557	
	West Virginia	1,171,175	
Peoria & Pekin Union	Illinois	285,882	285,882
Peoria, Hanna City & Western	do	488,569	488,569
Pere Marquette	Michigan	373,968	373,968
Peru, La Salle & Deer Park	Illinois	69,611	69,611
Pittsburg County Railway Co	Oklahoma	30,000	30,000
Pittsburgh & Lake Erie	Pennsylvania	2,138,108	2,138,108
Pittsburg & Shawmut	do	1,782,244	1,782,244
Pittsburgh & Susquehanna	do	156,999	156,999
Pittsburgh & West Virginia	Ohio	552,662	5,293,344
	Pennsylvania	4,474,442	
	West Virginia	266,240	
Pittsburgh, Chartiers & Youghiogheny	Pennsylvania	137,106	137,106
Pittsburgh, Harmony, Butler & New Castle	do	19,383	19,383
Pittsburgh, Lisbon & Western	do	190,006	190,006
Pittsburg, Shawmut & Northern	do	571,472	571,472
Pond Fork & Bald Knob	West Virginia	47,000	47,000
Preston	Maryland	268	149,531
	West Virginia	149,263	
Puget Sound Electric	Washington	15,463	15,463
Quincy, Omaha & Kansas City	Missouri	20,142	20,142
Reynoldsville & Falls Creek	Pennsylvania	78,329	78,329

TABLE 69.—*Bituminous coal loaded for shipment by railroads and waterways in 1925, in net tons*—Continued

Route	State	Quantity	
		By State	Total for route
RAILROADS—continued			
Rio Grande & Eagle Pass	Texas	21,057	21,057
Rio Grande Eastern	New Mexico	12,000	12,000
Rio Grande Southern	Colorado	49,657	49,657
Rock Castle River	Kentucky	3,448	3,448
Rockdale, Sandow & Southern	Texas	127,871	127,871
Rock Island Southern	Illinois	56,737	56,737
St. Louis & Belleville Electric	do	39,435	39,435
St. Louis & Hannibal	Missouri	16,101	16,101
St. Louis & O'Fallon	Illinois	665,249	665,249
St. Louis & Ohio River	do	11,622	11,622
St. Louis-San Francisco	Alabama	2,814,034	5,452,310
	Arkansas	134,521	
	Kansas	1,571,368	
	Missouri	477,256	
	Oklahoma	455,131	
St. Louis Southwestern of Texas	Texas	106,425	106,425
St. Louis, Troy & Eastern	Illinois	673,404	673,404
San Antonio & Aransas Pass	Texas	15,454	15,454
San Antonio Southern	do	18,250	18,250
Sandy Valley & Elkhorn	Kentucky	2,148,722	2,148,722
Scotts Run	West Virginia	1,174,588	1,174,588
Seaboard Air Line	Alabama	6,398	6,398
Sewell Valley	West Virginia	114,922	114,922
Southern	Alabama	3,923,486	11,024,366
	Illinois	854,564	
	Indiana	1,222,262	
	Kentucky	542,911	
	Tennessee	1,716,379	
	Virginia	2,764,764	
Southern Pacific	Oregon	3,900	3,900
Springfield Terminal	Illinois	57	57
Strouds Creek & Muddlety	West Virginia	52,005	52,005
Susquehanna & New York	Pennsylvania	30,241	30,241
Tennessee	Tennessee	327,341	327,341
Tennessee Central	do	733,610	733,610
Tennessee Coal, Iron & R. R. Co.	Alabama	3,313,167	3,313,167
Texas & Pacific	Texas	115,034	115,034
Texas Short Line	do	10,000	10,000
Thomas & Sayreton	Alabama	445,810	445,810
Toledo & Ohio Central	Ohio	1,217,147	1,217,147
Toledo, Peoria & Western	Illinois	188,833	188,833
Toronto, Knoxville & Western	Ohio	62,529	62,529
Uintah	Colorado	10,674	10,674
Union	Pennsylvania	130,410	130,410
Union Pacific	Colorado	1,213,553	4,839,513
	Kansas	10,000	
	Utah	49,049	
	Wyoming	3,566,911	
Unity	Pennsylvania	925,091	925,091
Ursina & North Fork	do	4,578	4,578
Utah	Utah	1,589,083	1,589,083
Virginian	Virginia	24,982	8,127,386
	West Virginia	8,102,404	
Wabash	Illinois	2,784,790	3,073,426
	Iowa	232,984	
	Missouri	55,652	
Wabash, Chester & Western	Illinois	56,577	56,577
Washington Run	Pennsylvania	456,786	456,786
Western Allegheny	do	463,869	463,869
Western Maryland	Maryland	1,122,803	3,991,384
	Pennsylvania	603,969	
	West Virginia	2,264,612	
West Virginia Northern	do	411,270	411,270
Wheeling & Lake Erie	Ohio	4,592,113	4,592,113
Woodward Iron Co.	Alabama	962,629	962,629
Wyoming	Wyoming	768	768
Youngstown & Ohio River	Ohio	122,416	122,416
Zanesville & Western	do	889,606	889,606
Total railroad shipments		460,232,442	460,232,442
WATERWAYS			
Allegheny River	Pennsylvania	485,241	485,241
Black Warrior River	Alabama	74,675	74,675
Great Kanawha River	West Virginia	426,067	426,067
Green River	Kentucky	35,329	35,329
Illinois River	Illinois	9,185	9,185
Monongahela River	Pennsylvania	15,531,836	15,531,836

TABLE 69.—*Bituminous coal loaded for shipment by railroads and waterways in 1925, in net tons*—Continued

Route	State	Quantity: By State	Quantity: Total for route
WATERWAYS—continued			
Muskingum River	Ohio	50,000	50,000
Ohio River	Kentucky	269,389	327,123
	Ohio	2,265	
	Pennsylvania	2,544	
	West Virginia	52,925	
Tradewater River	Kentucky	914	914
Total waterway shipments		16,940,370	16,940,370
Grand total, loaded at mines for shipment by railroads and waterways.		477,172,812	477,172,812
Sold to local trade and used by employees		21,351,223	21,351,223
Used at mines for steam and heat		5,776,103	5,776,103
Made into coke at mines		15,752,603	15,752,603
Total production		520,052,741	520,052,741

STOCKS OF COAL HELD BY CONSUMERS

TABLE 70.—*Stocks of bituminous coal in hands of commercial consumers and stocks of anthracite and bituminous coal in retail dealers' yards, 1916–1925*

[From periodic stock reports of the Bureau of Mines. Coal for steamship fuel, on Lake docks, in transit, and in the bins of householders is not included]

Date	Total stock estimated (tons) [1]	Day's supply at current rate of consumption on date of stock taking: By-product coke plants	Steel plants	Other industrials	Coal gas plants	Electric utilities	Coal dealers, bituminous	Railroads	Total bituminous	Anthracite in retail yards
1916—Oct. 1	27,000,000	[2]	25		[2]	[2]	[2]	20	[3]	[2]
1917—Oct. 1	28,100,000	[2]	27		[2]	[2]	[2]	18	[4]	[2]
1918—July 15	39,700,000	28	27	48	72	39	15	25	31	[4]
Oct. 1	59,000,000	32	45	71	84	47	28	29	43	[4]
Armistice Day (Nov. 11)	63,000,000	35	45	71	85	49	37	31	45	[2]
1919—Jan. 1	57,900,000	32	42	65	81	49	39	32	42	36
Apr. 1	40,400,000	23	35	47	58	48	25	[2]	31	31
1920—Mar. 1	24,000,000	15	9	27	31	21	13	11	18	21
June 1	20,000,000	8	11	24	22	22	10	10	15	15
1921—Jan. 1	45,800,000	29	42	64	55	44	30	23	39	24
Apr. 1	39,500,000	28	38	47	66	48	26	24	36	36
Aug. 1	41,000,000	31	46	56	79	44	42	32	39	50
Nov. 1	48,500,000	38	46	67	87	54	46	31	43	47
1922—Jan. 1	48,000,000	42	48	51	89	51	33	35	41	44
Mar. 1	52,500,000	39	48	56	82	54	23	42	43	28
Apr. 1	[5] 63,000,000	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]
Sept. 1	22,000,000	11	12	32	34	26	11	13	17	5
Oct. 1	26,000,000	14	17	33	38	30	18	15	21	7
Nov. 1	32,000,000	18	21	39	55	32	21	13	23	11
1923—Jan. 1	36,000,000	19	27	40	60	33	18	16	26	11
Feb. 1	38,000,000	20	26	36	62	35	15	18	24	8
Mar. 1	36,000,000	19	26	34	58	34	11	16	22	6
June 1	42,000,000	23	29	39	75	45	27	21	30	19
July 1	46,000,000	26	35	46	89	48	39	28	37	25
Aug. 1	52,000,000	27	35	54	104	52	45	39	44	25
Sept. 1	56,000,000	30	33	56	110	52	38	44	46	21
Oct. 1	60,000,000	33	39	56	91	49	36	41	45	22
1924—Jan. 1	62,000,000	35	43	55	91	51	34	44	46	37
June 1	51,000,000	34	56	53	88	63	40	50	49	49
Sept. 1	47,000,000	30	42	48	90	58	46	42	45	58
1925—Jan. 1	[5] 45,000,000	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]
Mar. 1	44,000,000	25	30	40	78	51	33	35	37	46
June 1	38,000,000	20	27	32	68	48	31	32	32	52
Sept. 1	43,000,000	22	30	30	67	43	27	28	32	53
Nov. 1	48,000,000	26	32	44	78	46	30	30	35	27
Dec. 31	49,000,000	26	28	39	72	48	20	27	30	32

[1] The figures for 1918 in this table are based upon an actual count. Beginning with Apr. 1, 1919, the figures are based upon reports from a selected list of 5,000 consumers whose stocks in 1918 bore a known relation to the known total stocks.

[2] No data.

[3] Data incomplete. Estimated as 22 days.

[4] Data incomplete. Estimated as 21 days.

[5] No canvass of consumers was made on this date. The total was estimated from stocks reported in the preceding canvass.

CONSUMPTION OF COAL BY USES

With allowance for changes in stocks as well as for exports and imports, the total consumption of anthracite in the United States in the year 1923 was 86,914,000 net tons (Table 4). The total consumption of bituminous coal calculated in the same way was 519,000,000 net tons. Table 71 shows how these quantities were apportioned among the principal classes of consumers. The year 1923 is shown because it is the latest for which a reasonably detailed analysis can be made. Some items in the total consumption, such as locomotive fuel, foreign bunkers, coal made into coke, and consumption by electric utilities, are reported currently, but for the very large item of consumption by general industries the latest available data are those of the Census of Manufactures of 1923. Fortunately, 1923 was a year of industrial activity, in which the relative apportionment of the total among the several uses was close to normal.

TABLE 71.—*Consumption of anthracite and bituminous coal in the United States, by principal uses, in 1923, a typical year of active consumption*

	Net tons	Per cent of total
ANTHRACITE		
Power and heat at coal mines [1]	8,018,000	9.2
Railroads	4,578,000	5.3
Artificial gas plants	1,101,000	1.3
Electric utilities, including electric railways	2,273,000	2.6
Domestic trade (domestic sizes not included elsewhere)	52,344,000	60.2
Steam trade (steam sizes not included elsewhere for heating and industrial use)	18,600,000	21.4
	86,914,000	100.0
BITUMINOUS		
Power and heat at coal mines	8,765,000	1.7
Mines and quarries, other than coal	4,190,000	.8
Railroads	155,795,000	30.0
Public utilities:		
Electric, including electric railways	36,800,000	7.1
Gas	5,150,000	1.0
Beehive coke plants	30,085,000	5.8
By-product coke plants	54,280,000	10.4
Bunkers:		
Foreign	5,095,000	1.0
Coastwise and Lake trade	2,940,000	.6
Iron and steel works, not including coal for coke [2]	30,220,000	5.8
General industrial and other unspecified uses	119,280,000	23.0
Domestic consumers	66,400,000	12.8
	519,000,000	100.0

[1] Includes 167,000 tons, or 0.2 per cent of coal used at mines and quarries other than coal mines.
[2] Includes blast furnaces, steel works, and rolling mills.

IMPORTS AND EXPORTS [9]

TABLE 72.—*Bituminous coal imported, by countries and districts, 1921–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Country and district	1921	1922	1923	1924	1925
COUNTRY OF ORIGIN					
North America:					
Canada	1,092,132	1,555,038	1,099,773	317,184	527,759
Mexico	115	147	9	26	150
Cuba		325	133		
Dutch West Indies	221				
South America:					
Brazil	123	20			
Chile					2
Peru			728		
Venezuela	2	129			
Europe:					
Belgium	1	1,680	504		
France	875		9	348	67
Germany	225	2,894	538		450
Italy	1				6
Netherlands					2,473
Poland and Danzig			1		
Sweden		44			
United Kingdom—					
England	27,608	2,831,293	545,587	7,951	[a] 40,228
Scotland	1,120	457,794	97,968	20,235	
Asia:					
China	1,667	6,588	2	146	
Hong Kong	56		9,860	1	
Japan	50,191	15,428	22,496	28,923	17,190
Kwantung, leased territory	8,760				25
Philippine Islands	201	1,230	280		4
Russia in Asia		134			
Africa: Egypt	301				
Oceania:					
Australia	73,976	187,255	89,877	39,923	10,919
New Zealand	14		14,541		2,464
Other Oceania				2,489	
	1,257,589	5,059,999	1,882,306	417,226	601,737
DISTRICT OF ENTRY					
Alaska	33,776	34,251	43,204	41,980	47,230
Buffalo	17	6,579			
Connecticut		4,523			48
Dakota	2,896	6,066	12,624	85	11,524
Duluth-Superior	272	17,740	371		678
Florida	28			134	90
Galveston		2,520			
Georgia		90			
Hawaii	47,210	92,876	85,314	45,207	25,043
Los Angeles		28			29
Maine and New Hampshire	26,078	356,721	261,338	46,808	19,304
Maryland	3	89,589	572		
Massachusetts	301	1,645,087	360,538		10,544
Michigan		2,918	344	112	6
Montana-Idaho	702,707	506,179	513,465	114,676	343,813
New Orleans	347	762			
New York	1,939	1,148,142	239,369	4,561	10,518
Ohio		1,652			
Oregon	4,205	16,794	7,093	3,651	3,295
Philadelphia		218,361	22,515		2,271
Pittsburgh		1	1	22	
Porto Rico	221	129			
Rhode Island		210,903	65,295		5,962
St. Lawrence	317	14,597		1,007	101
San Antonio	87	147	9	26	150
San Diego	2,240				
San Francisco	86,902	184,880	62,271	23,161	8,124
Vermont	9	41,096		6	3
Virginia		325			
Wisconsin		1,680			
Washington	348,034	455,363	207,983	135,790	113,004
	1,257,589	5,059,999	1,882,306	417,226	601,737

[a] No separation made in 1925.

[9] The tables of imports and exports have been compiled by J. A. Dorsey, of the Bureau of Mines, from the records of the Bureau of Foreign and Domestic Commerce.

TABLE 73.—*Anthracite imported, by countries and districts, 1921–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Country and district	1921	1922	1923	1924	1925
COUNTRY OF ORIGIN					
Africa:					
British—West		224			
Algeria and Tunisia			168		
Australia		8,427	11,828	1,836	4,480
Belgium					5,684
Brazil	26				
British India	6				
British West Indies (other)				4	12
Canada	6,654	21,220	19,118	16,249	6,834
Chile	1				
China		3	1,037		112
Cuba					1
France	10				
Germany		901			36,636
Japan	2,174			168	3,946
Kwantung, leased territory	9				
Mexico			99	94	
Netherlands				448	6,485
Peru	3	1			
Spain		34			
United Kingdom:					
England	11	202,718	253,828	99,152	[1] 318,592
Scotland			14,282		
Virgin Islands of the United States					112
	8,894	233,528	300,360	117,951	382,894
DISTRICT OF ENTRY					
Alaska		1			
Buffalo	46		176	16	722
Connecticut			7,549		
Dakota		311	7,650	8,164	724
Duluth-Superior	238	7,940	31	38	64
Florida					1
Hawaii	2,173				3,492
Los Angeles			220		
Maine and New Hampshire	1,259	32,031	35,505	22,524	47,543
Maryland		37,284	16,377	8,296	
Massachusetts		32,791	83,988	47,006	117,057
Michigan	39	540	571	317	58
Montana-Idaho	40		3,609	5,646	360
New Orleans		224		7	
New York	67	74,525	98,048		145,168
Oregon		3	2,789	1,959	
Philadelphia			14,869		2,789
Porto Rico				4	124
Rhode Island		26,967	17,306	23,110	58,531
St. Lawrence	35	54	67		383
San Antonio			99	94	
San Francisco		9,547	9,180	493	4,934
South Carolina			224		
Vermont	30	532	235		892
Washington	4,967	10,778	1,867	277	112
	8,894	233,528	300,360	117,951	382,894

[1] No separation made in 1925.

TABLE 74.—*Bituminous coal exported, by countries, 1921–1925, in net tons* [1]

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Country	1921	1922	1923	1924	1925
North America:					
Bermuda	36,738	15,968	16,936	20,206	13,470
British Honduras	780	1,900	1,633	429	391
Canada	13,396,774	10,836,347	16,854,257	12,654,869	13,421,007
Central America—					
Costa Rica	3,613	2,470	3,343	3,836	2
Guatemala	2,940	670	134	668	3,401
Honduras	15,837	6,512	1,719	2,154	2,018
Nicaragua	2,045	979	3,974	5,990	2,567
Panama	249,568	116,993	21,577	264,123	349,312
Salvador	44	34	3	72	69
Greenland	795	224			
Mexico	192,876	101,983	106,006	91,507	125,804
Miquelon and St. Pierre Islands			9,473	3,730	12,443
Newfoundland and Labrador	5,466	2,388	37,612	100,869	109,659
West Indies—					
British—					
Barbados	22,135	20,904	29,974	39,141	37,583
Jamaica	65,690	31,028	35,035	46,042	56,073
Trinidad and Tobago	22,785	19,618	23,885	28,326	26,180
Other British West Indies	8,698	13,938	24,879	19,031	36,745
Cuba	587,521	519,521	683,893	598,921	694,125
Dominican Republic	9,456	7,893	4,655	3,716	8,028
Dutch West Indies	13,665	32,334	60,282	60,453	86,090
French West Indies	62,520	60,474	87,367	147,338	139,385
Haiti	80	3	2,988	234	67
Virgin Islands of the United States	26,566	15,683	35,093	61,984	70,743
	14,726,592	11,807,864	18,044,718	14,153,639	15,195,162
South America:					
Argentina	842,952	88,448	146,793	220,058	164,712
Bolivia			584		
Brazil	590,492	170,389	348,011	850,234	657,888
Chile	168,945	52,546	21,984	61,940	27,280
Colombia	12,867	6,325	4,542	1,556	1,581
Ecuador	4,729	4,613	2,238	3,423	1,157
Guiana—					
British	3,861	3,642	12,282	18,314	17,352
Dutch	2,757	2,129	2,659	2,913	2,726
French					258
Paraguay				299	
Peru	31,530	15,488	11,222	21,410	21,462
Uruguay	98,997		32,810	68,803	22,194
Venezuela	1,724	26	2,190	2,598	811
	1,758,854	343,606	585,315	1,251,548	917,421
Europe:					
Azores and Madeira Islands	90,278				
Belgium	26,554		91,280	17,164	
Czechoslovakia	7,529				
Denmark	171,307	3			
Finland	920				
France	680,435	13,453	943,789	471,401	261,751
Germany	43,292	2,939	375,772	29,488	6,896
Gibraltar	141,420				
Greece	107,659	11,123	42,740	16,979	
Hungary	8,292				
Iceland and Faroe Islands	15,551				
Italy	1,735,395	138,973	655,295	975,146	871,454
Latvia			13,259		
Malta, Gozo, etc	7,000				
Netherlands	374,180	2,841	424,397		
Norway	47,582		2,844		2,402
Portugal	112,200	1,421			
Rumania	2				
Russia in Europe	97,819				
Spain	65,504		40,989	3,799	
Sweden	75,107		57,817		
Switzerland	9,810				
Turkey in Europe	21,456				
United Kingdom—					
England	1,138,474	162	9,850	5,803	
Scotland	83,324		20,116		18,124
Ireland	454,317				
	5,515,407	170,915	2,678,148	1,519,780	1,160,627

[1] Amounts stated do not include fuel or bunker coal loaded on vessels engaged in the foreign trade, which aggregated in 1921, 8,453,220 tons; in 1922, 4,614,632 tons; in 1923, 5,093,024 tons; in 1924, 4,460,412 tons; and in 1925, 4,865,521 tons.

TABLE 74.—*Bituminous coal exported, by countries, 1921–1925, in net tons*—Con.

Country	1921	1922	1923	1924	1925
Asia:					
China	7,343			4,355	3,006
East Indies—					
British India				1,138	4,492
Dutch	14,445			1,912	
Far Eastern Republic		12			
Japan				1,978	
Java and Madura				1,557	
Palestine and Syria	[2] 7,595				
Philippine Islands	9,559			6,440	
Russia in Asia	45	9		1	11
Turkey in Asia	19,182		2,821		
	58,169	21	2,821	17,381	7,509
Africa:					
Algeria and Tunisia		7,869	76,925	38,859	35,607
British Africa—West	7,439	34	1,144	6,260	23,064
Canary Islands	192,973	1,782	2,452		
Egypt	533,344	58,372	25,756	46,245	40,018
French Africa	204,746	22,622	15,710	54,905	78,677
Morocco	336				
Portuguese Africa	66,284				
	1,005,122	90,679	121,987	146,269	177,366
Oceania:					
Australia			18,533		3,474
French					1
New Zealand	67,011		1,587	4,349	
Other British Oceania	11			7,381	
Other Oceania			470		
	67,022		20,590	11,730	3,475
Grand total	23,131,166	12,413,085	21,453,579	17,100,347	17,461,560

[2] Figures cover period July to December, 1921.

TABLE 75.—*Bituminous coal exported, by districts and ports, 1921–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Customs district	Principal ocean port or rail gateway	1921	1922	1923	1924	1925
North Atlantic:						
Massachusetts	Boston	3,472	28	339	148	692
Connecticut			83			
New York	New York	69,038	8,756	16,675	33,534	15,711
Philadelphia	Philadelphia	687,391	140,949	339,524	164,680	194,706
Maryland	Baltimore	1,644,217	103,741	1,589,667	653,679	336,855
Virginia	Hampton Roads	6,740,444	1,124,511	2,610,243	3,632,232	4,260,319
South Atlantic:						
South Carolina	Charleston	336,567	136,776	262,462	135,708	185,833
Georgia	Savannah	10,258				196
Florida	Pensacola	129,446	53,434	36,020	4,004	11,629
Mobile	Mobile	19,028	16,298	10,312	49,495	45,969
New Orleans	New Orleans	19,776	9,750	7,950	6,524	5,547
Galveston		12	210	3		
Sabine		56	54	34		853
Mexican border:						
Arizona		26,992	22,317	40,769	41,228	62,821
El Paso		123,530	50,539	39,585	34,129	33,950
San Antonio		15,804	2,523	2,747	3,004	2,029
Pacific coast:						
Washington [1]		16,228	13,105	14,852	46,237	58,223
Oregon					602	
San Francisco		587	5,852	2,636	157	797
Los Angeles		7		90	200	96
San Diego		180	199	32		
Lake Erie ports: Ohio [2]	Lower Lake docks	5,835,505	4,281,290	6,991,116	5,766,459	5,244,332
Lake Michigan ports: Wisconsin.			112			
Rail gateways on Canadian border:						
Eastern—						
Maine and New Hampshire.		244	301	11,528	4,941	41,580
Vermont		30,407	7,578	15,922	4,161	3,545
St. Lawrence		2,149,468	1,427,060	2,781,926	1,430,042	1,548,817
Rochester [3]		468,800	505,475	734,010	637,272	572,423
Buffalo		3,277,863	3,013,742	3,867,829	2,988,357	2,569,142
Michigan		1,340,509	1,400,105	1,926,314	1,284,609	2,088,046
Western—						
Duluth, Superior, and International Falls.		119,120	62,152	62,419	71,250	70,794
Dakota		58,517	25,950	87,984	100,900	106,503
Montana-Idaho		7,426		34	226	
Miscellaneous:						
Alaska		50	195	293	63	16
Hawaii		11				
Porto Rico		213		264	6,506	136
		23,131,166	12,413,085	21,453,579	17,100,347	17,461,560

[1] Both rail to Canada and by tide to foreign ports.
[2] Lower Lake docks as follows: Toledo, Sandusky, Huron, Lorain, Cleveland, Fairport, Ashtabula, Conneaut, and Erie.
[3] Rail, car ferry, and Lake Ontario

TABLE 76.—*Anthracite exported, by countries, 1921–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Country	1921	1922	1923	1924	1925
North America:					
Bermuda	3,716		2,208	2,053	1,639
British Honduras	690		858	42	353
Canada	4,519,216	2,572,450	4,988,837	3,927,999	3,096,815
Central America—					
Costa Rica		2	2	12	
Guatemala	110	184	137	3	106
Honduras		93	3		45
Nicaragua		100	1	4	115
Panama	1,795	11		392	920
Salvador	6	9	15	2	
Mexico	49,820	6,408	4,232	3,665	809
Miquelon and St. Pierre Islands	293	138	303	200	
Newfoundland and Labrador	17,245	5,903	5,946	11,623	10,781
West Indies—					
British—					
Barbados	291	151	112	316	
Jamaica	2	22			36
Other British West Indies	2,776	416	162	174	204
Cuba	53,648	48,748	71,280	63,156	64,994
Dominican Republic	10,531	1,506	10,425	5,341	2,091
Dutch West Indies	444			1	
Haiti	1		141	45	
	4,660,584	2,636,141	5,084,662	4,015,028	3,178,908
South America:					
Argentina	1,959	25	84		
Brazil	22	4		6	
Chile	596		505	6	3
Colombia	80		17	38	88
Ecuador			55	1	
Guiana—					
British				3	
Dutch	34				
French		140			
Peru				560	4
Venezuela	11	9	21	24	3
	2,702	178	682	638	98
Europe:					
Azores and Madeira Islands	30				
Denmark	3,920	9			
France	1,594		4,787	670	
Germany		34			
Greece			3		
Italy	174				
Netherlands	1,278	520			
Spain	4,767				
United Kingdom	368	259	4	1,448	
	12,131	822	4,794	2,118	
Asia:					
Russia in Asia	448				
Turkey in Asia	101				
	549				
Africa:					
British West Africa	136				
Canary Islands	1,266				
Egypt		12,314			
	1,402	12,314			
Oceania:					
British				1	
French		2			
		2		1	
Grand total	4,677,368	2,649,457	5,090,138	4,017,785	3,179,006

TABLE 77.—*Anthracite exported, by districts and ports, 1921–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Customs district	Principal ocean port or rail gateway	1921	1922	1923	1924	1925
North Atlantic:						
Massachusetts	Boston	983	712	405	467	477
Connecticut			34	48	45	
New York	New York	147,700	66,391	96,597	110,482	80,117
Philadelphia	Philadelphia	72,844	47,554	59,311	73,148	73,940
Maryland	Baltimore	4,087	12,314	11,091		
Virginia	Hampton Roads	5,464		7,791		
		231,078	127,005	175,243	184,142	154,534
South Atlantic:						
Georgia	Savannah					44
South Carolina	Charleston			3,454		
Florida	Pensacola	30	547	165	3	2
Mobile	Mobile		140		45	
New Orleans	New Orleans		236	10	17	165
Galveston			1			
Sabine		35			35	
		65	924	3,629	100	211
Mexican border:						
Arizona		8,840	3,381	421	1,368	29
El Paso		496	1,667	1,929	1,626	637
San Antonio		40,153	1,211	1,607	577	73
		49,489	6,259	3,957	3,571	739
Pacific coast:						
Washington		1,206	137	2,585	3,178	30
San Francisco		66	143	39	21	
Los Angeles		5	2	174	63	36
San Diego		54	65	1		
		1,331	347	2,799	3,262	66
Lake Erie ports: Ohio [1]	Lower Lake docks	24,687	13,412	39,731	16,908	17,664
Rail gateways on Canadian border:						
Eastern—						
Maine and New Hampshire		866	812	408	159	340
Vermont		20,326	7,867	14,123	4,509	3,086
St. Lawrence		1,350,470	819,021	1,647,117	1,252,786	985,145
Rochester [2]		427,467	273,842	512,434	287,609	205,556
Buffalo		2,532,752	1,381,779	2,619,713	2,220,310	1,769,625
Michigan		3,230	3,827	7,893	7,618	8,961
		4,335,111	2,487,148	4,801,688	3,772,991	2,972,713
Western—						
Duluth, Superior, and International Falls		9,025	4,002	22,681	9,803	12,225
Dakota		26,582	10,190	40,369	27,007	20,854
		35,607	14,192	63,050	36,810	33,079
Miscellaneous:						
Alaska			2	6		
Porto Rico			168	35	1	
			170	41	1	
Grand total		4,677,368	2,649,457	5,090,138	4,017,785	3,179,006

[1] Chiefly Buffalo and Erie.

[2] Rail, car ferry, and Lake Ontario.

TABLE 78.—*Anthracite and bituminous coal exported to Canada, Mexico, and all other countries, by months, 1922–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

	January	February	March	April	May	June	July	August	September	October	November	December	Total
1922													
Anthracite:													
Canada	245,567	292,854	305,705	121,085	62,434	43,700	16,884	31,678	97,910	448,281	485,768	420,584	2,572,450
Mexico	435	114	596	488	213	401	1,134	305	1,409	192	912	209	6,408
All other	4,923	14,926	23,822	832	5,516	1,017	684	165	11	5,126	6,801	6,776	70,599
	250,925	307,894	330,123	122,405	68,163	45,118	18,702	32,148	99,330	453,599	493,481	427,569	2,649,457
Bituminous (not including fuel or bunker coal):													
Canada	589,138	740,091	1,091,240	507,814	304,804	479,191	324,809	418,420	1,244,089	1,845,002	1,750,540	1,541,209	10,836,347
Mexico	8,039	5,885	8,836	18,163	12,228	6,649	7,184	6,778	5,327	7,894	5,245	9,755	101,983
All other	124,006	165,241	229,715	274,817	130,465	119,576	78,248	51,396	66,592	84,060	56,416	94,223	1,474,755
	721,183	911,217	1,329,791	800,794	447,497	605,416	410,241	476,594	1,316,008	1,936,956	1,812,201	1,645,187	12,413,085
Fuel or bunker coal loaded on vessels engaged in foreign trade	424,093	401,569	464,746	449,313	470,944	409,116	360,351	291,657	291,528	330,000	371,440	349,875	4,614,632
1923													
Anthracite:													
Canada	389,017	361,928	440,437	462,887	491,567	460,897	489,704	488,097	187,897	446,130	402,335	367,941	4,988,837
Mexico	205	216	608	709	155	137	227	394	432	290	461	397	4,231
All other	9,516	7,849	6,466	8,957	7,589	7,791	20,083	7,081	8,443	2,251	10,964	80	97,070
	398,738	369,993	447,511	472,553	499,311	468,825	510,014	495,572	196,772	448,671	413,760	368,418	5,090,138
Bituminous (not including fuel or bunker coal):													
Canada	1,121,848	817,725	1,031,104	996,688	1,772,824	2,041,756	1,902,764	1,964,449	1,695,594	1,397,706	1,159,274	952,525	16,854,257
Mexico	7,318	4,817	6,236	12,813	12,668	12,947	12,533	7,120	5,461	5,752	6,860	11,481	106,006
All other	93,968	80,148	329,027	541,564	733,389	654,318	636,333	399,565	279,799	264,096	237,724	243,385	4,493,316
	1,223,134	902,690	1,366,367	1,551,065	2,518,881	2,709,021	2,551,630	2,371,134	1,980,854	1,667,554	1,403,858	1,207,391	21,453,579
Fuel or bunker coal loaded on vessels engaged in foreign trade	358,954	352,782	405,157	388,065	512,624	492,643	481,839	506,754	439,631	413,503	393,138	347,934	5,093,024

1924													
Anthracite:													
Canada	299,645	339,924	342,136	268,815	299,697	374,939	311,722	275,252	359,253	398,263	306,028	352,324	3,927,999
Mexico	1,511	66	310	46	143	276	175	233	223	168	514		3,665
All other	3,490	4,855	3,906	5,624	4,782	12,696	11,942	9,091	6,032	7,141	9,541	7,022	86,121
	304,646	344,845	346,352	274,485	304,622	387,911	323,839	284,576	365,508	405,572	316,083	359,346	4,017,785
Bituminous (not including fuel or bunker coal):													
Canada	834,660	1,057,298	909,636	607,441	1,019,831	1,228,476	1,347,545	1,175,889	1,345,961	1,449,239	864,494	814,399	12,654,869
Mexico	6,527	7,644	11,011	10,635	7,225	10,763	5,028	5,140	6,969	7,649	5,046	7,870	91,507
All other	343,368	364,711	350,871	459,726	399,005	358,977	475,047	382,341	331,277	261,706	227,867	399,075	4,353,971
	1,184,555	1,429,653	1,271,518	1,077,802	1,426,061	1,598,216	1,827,620	1,563,370	1,684,207	1,718,594	1,097,407	1,221,344	17,100,347
Fuel or bunker coal loaded on vessels engaged in foregin trade	362,229	375,451	339,171	389,167	407,570	382,155	387,874	354,785	349,925	393,474	323,935	394,676	4,460,412
1925													
Anthracite:													
Canada	326,704	311,348	224,245	252,896	358,645	339,360	496,055	518,028	180,739	46,066	34,879	7,850	3,096,815
Mexico	1	126	83	1	36	330	4		125		1	102	809
All other	4,590	12,173	739	4,242	5,718	11,469	22,138	15,144	2,000	3,029	116	24	81,382
	331,295	323,647	225,067	257,139	364,399	351,159	518,197	533,172	182,864	49,095	34,996	7,976	3,179,006
Bituminous (not including fuel or bunker coal):													
Canada	796,501	657,670	741,980	655,602	1,122,015	1,163,080	1,467,258	1,509,883	1,507,787	1,179,698	1,347,708	1,271,825	13,421,097
Mexico	10,606	7,270	7,227	17,686	10,581	9,046	13,512	8,680	9,485	7,745	8,191	15,775	125,804
All other	290,354	253,916	279,789	319,574	387,169	436,164	365,432	494,752	307,156	207,562	298,368	274,513	3,914,749
	1,097,461	918,856	1,028,996	992,862	1,519,765	1,608,290	1,846,202	2,013,315	1,824,428	1,395,005	1,654,267	1,562,113	17,461,560
Fuel or bunker coal loaded on vessels engaged in foreign trade	364,368	328,848	352,379	395,527	448,477	441,752	458,843	497,346	420,809	394,611	381,209	381,352	4,865,521

TABLE 79.—*Shipments of coal to Alaska, Hawaii, and Porto Rico, 1916–1925, in net tons*

[Compiled from the records of the Bureau of Foreign and Domestic Commerce]

Year	Alaska (all coal)	Hawaii (all coal)	Porto Rico [1]	
			Anthracite	Bituminous
1916	44,934	11,697	2,069	168,367
1917	58,116	39,442	125,635	
1918	51,520	73,006	116,161	
1919	57,166	42,495	83,492	
1920	38,128	17,634	104,021	
1921	24,278	9,249	55,800	
1922	28,457	846	55,356	
1923	34,082	25,344	49,302	
1924	40,161	49,074	58,434	
1925	37,324	4,906	72,224	

[1] Separate figures for anthracite and bituminous coal have not been given since 1916.

WORLD PRODUCTION OF COAL

Tables 80 and 81 have been compiled from the official reports of the several countries, supplemented by trade information, by L. M. Jones, of the Bureau of Mines. The unit of measurement is the metric ton of 2,204.6 pounds, which can best be remembered by the American reader as roughly equivalent to the long or gross ton. The term "coal" as used by the Bureau of Mines includes lignite, and the production for the world is simply the total of the quantities reported, no attempt being made to reduce the statistics for inferior coals to an equivalent tonnage of coals of higher rank. Where possible, however, lignite is shown separately.

TABLE 80.—*World production of coal of all grades, 1916–1925* [1]

Year	Production, in part estimated (metric tons)	Percentage produced by United States	Year	Production, in part estimated (metric tons)	Percentage produced by United States
1916	1,291,000,000	41.5	1921	1,135,000,000	40.5
1917	1,356,000,000	43.6	1922	1,226,000,000	35.3
1918	1,333,000,000	46.3	1923	1,360,000,000	43.9
1919	1,173,000,000	42.8	1924	1,357,000,000	38.2
1920	1,320,000,000	45.3	1925	1,362,000,000	38.8

[1] Includes lignite and subbituminous coal as reported, without attempt to reduce to equivalent tonnage of bituminous coal.

TABLE 81.—*Coal and lignite produced in the principal countries of the world in the calendar years 1922–1925* [1]

[In metric tons of 2,204.6 pounds]

Country	1922	1923	1924	1925
North America:				
Canada—				
Coal	10,587,611	12,163,901	9,138,841	8,627,519
Lignite	3,162,907	3,249,605	3,233,459	3,288,262
Greenland	2,100	2,117	2,500	2,100
Mexico	932,550	1,261,541	1,226,696	1,444,498
United States—				
Anthracite	49,607,344	84,675,282	79,765,491	56,079,281
Bituminous and lignite	383,073,174	512,161,770	438,790,754	471,781,446
South America:				
Argentina	[2]	[2]	[2]	[2]
Brazil	500,000	324,154	342,200	392,376
Chile	1,053,001	1,164,028	1,539,141	1,453,228
Colombia	[2]	[2]	[2]	[2]
Peru	294,492	[3] 253,000	151,735	[3] 102,124
Venezuela	[4] 20,782	[4] 18,050	[4] 16,695	[4] 16,798
Europe:				
Austria—				
Coal	165,727	157,650	171,959	145,200
Lignite	3,135,902	2,685,467	2,785,816	3,033,378
Belgium	21,208,500	22,922,340	23,361,910	23,097,040
Bulgaria—				
Coal	46,725	61,600	69,670	73,000
Lignite	983,311	1,012,594	1,155,291	1,156,006
Czechoslovakia—				
Coal	10,464,990	12,347,251	15,178,942	12,754,456
Lignite	19,174,296	16,265,530	20,459,690	18,789,098
France—				
Coal	31,141,096	37,679,314	44,011,240	47,047,630
Lignite	772,014	877,123	944,080	1,007,270
Germany—				
Coal	[5] 129,964,597	62,316,134	118,768,748	132,729,095
Lignite	137,178,830	118,784,997	124,637,201	139,804,258
Saar [6]	11,240,000	9,192,275	14,032,120	12,989,850
Greece—				
Lignite	131,515	117,927	129,530	[2]
Hungary—				
Coal	941,380	793,075	744,394	805,019
Lignite	6,776,230	6,894,958	6,333,286	5,520,760
Italy—				
Coal	195,352	173,700	126,985	188,522
Lignite	745,402	953,460	917,491	1,105,474
Netherlands—				
Coal	4,866,371	5,595,478	6,180,182	7,116,970
Lignite	28,919	54,185	191,202	207,623
Poland—				
Coal	[7] 23,974,814	36,097,997	32,224,680	29,080,499
Lignite	219,983	171,035	88,038	65,675
Portugal—				
Coal	127,279	137,613	124,801	123,450
Lignite	14,380	15,952	8,121	16,970
Rumania—				
Coal	254,642	291,983	297,288	313,572
Lignite	1,861,579	2,229,410	2,479,083	2,615,278
Russia	7,781,400	[8] 14,504,300	[9] 13,918,000	[9] 14,334,970
Spain—				
Coal	4,435,843	5,971,446	6,127,586	6,117,342
Lignite	329,680	394,268	411,773	402,690
Spitzbergen	316,000	340,942	451,914	413,412
Sweden	378,861	419,569	437,856	263,879
Switzerland	4,000	[2]	[2]	[2]
United Kingdom—				
Great Britain	253,613,054	280,430,369	271,405,414	247,079,210
Ireland	[2]	[2]	[2]	[2]
Yugoslavia—				
Coal	101,861	136,267	131,633	178,456
Lignite	3,624,707	3,864,998	4,053,607	3,973,870

[1] Compiled by L. M. Jones, of the Bureau of Mines.
[2] Estimate included in total.
[3] Includes a small quantity of asphaltite.
[4] Exclusive of the output of the State of Falcon (about 8,000 tons), for which estimate is included in total.
[5] Includes entire output of Upper Silesia for January–May, inclusive; for June–December, inclusive, only that part of the province allocated to Germany.
[6] Mines under French control.
[7] Includes the output June–December, inclusive, of that part of Upper Silesia allocated to Poland.
[8] Russia in Asia included under Russia in Europe.
[9] Data for operating year, ended September 30.

TABLE 81.—*Coal and lignite produced in the principal countries of the world in the calendar years 1922–1925*—Continued

Country	1922	1923	1924	1925
Asia:				
British Borneo	115,855	[2]	120,613	101,904
China	22,681,000	19,955,000	20,969,000	13,800,000
Chosen	317,330	279,978	399,415	634,257
Dutch East Indies	1,040,678	1,156,625	1,446,757	1,400,725
Federated Malay States	286,351	322,994	378,778	414,634
India, British	19,316,112	19,972,376	21,514,131	21,239,892
Indo-China	988,991	1,056,921	1,235,880	1,362,970
Japan (including Taiwan and Karafuto)—				
Coal	29,163,727	30,584,316	31,816,662	33,363,381
Lignite	166,302	151,462	176,764	169,426
Philippine Islands	42,420	43,446	47,938	48,679
Russia	1,276,900	[8]	[9] 2,271,000	[9] 2,137,118
Turkey	681,000	[2]	[2]	[2]
Africa:				
Algeria	8,857	3,562	9,228	10,037
Belgian Congo	33,000	65,000	81,000	83,000
Nigeria	[10] 123,027	193,644	235,848	242,833
Portuguese East Africa				18,086
Rhodesia, Southern	467,787	559,999	591,526	689,201
Tunisia—				
Lignite	343	620	305	
Union of South Africa	9,271,948	11,252,305	11,819,988	12,321,728
Oceania:				
Australia—				
New South Wales	10,346,572	10,646,693	11,804,688	11,579,108
Queensland	973,903	1,077,686	1,141,143	1,196,067
Tasmania	70,349	82,014	77,208	83,009
Victoria	660,114	603,240	656,170	1,433,356
Western Australia	445,480	427,466	428,635	444,482
New Zealand—				
Coal	983,981	950,715	1,102,418	1,044,726
Lignite	903,656	1,050,735	1,014,224	1,070,269
Total, all grades	1,226,000,000	1,360,000,000	1,357,000,000	1,362,000,000
Lignite (total of items shown above)	179,000,000	159,000,000	169,000,000	[11] 182,000,000
Bituminous and anthracite (by subtraction)	1,047,000,000	1,201,000,000	1,188,000,000	1,180,000,000

[2] Estimate included in total.
[8] Russia in Asia included under Russia in Europe.
[9] Data for operating year, ended September 30.
[10] Exports.
[11] Including estimate for Greece.

Statistics of production in foreign countries for 1913 to 1922 appeared in Mineral Resources for 1922, Part II, pages 575 to 577. Data for 1888 to 1912 are given in the table following, which has been prepared in response to many requests to show the growth of production in the period before the World War. The table is the work of W. I Whiteside, of the Bureau of Mines. Official sources have been used wherever possible, supplemented in some instances by trade information. For those countries known to have produced coal, concerning which no figures could be obtained, estimates have been included in the totals. In no year does the tonnage estimated exceed 2 per cent.

TABLE 82.—*Coal and lignite produced in the principal countries of the world in the calendar years 1888–1912*

[In metric tons of 2,204.6 pounds]

	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900
North America:													
Canada	2,360,983	2,411,559	2,798,362	3,245,662	2,982,577	3,432,315	3,489,985	3,155,484	3,398,039	3,434,681	3,785,760	4,467,908	5,241,068
Mexico	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	113,191	(1)
United States	134,861,068	128,120,590	143,126,662	152,920,311	162,683,747	165,426,789	154,893,297	175,192,361	174,166,183	181,643,925	199,558,070	230,188,935	244,651,956
South America:													
Chile	356,000	(1)	(1)	240,000	(1)	(1)	(1)	(1)	204,858	243,968	282,663	241,995	325,042
Peru	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	10,000	(1)	47,500
Venezuela					(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Europe:													
Austria—													
Coal	8,274,461	8,592,876	8,931,065	9,192,885	9,241,126	9,732,626	9,572,952	9,722,679	9,899,522	10,492,771	10,947,522	11,455,139	10,992,545
Lignite	12,860,255	13,845,863	15,229,057	16,183,076	16,190,273	16,815,955	17,332,538	18,389,147	18,882,537	20,458,093	21,083,361	21,751,794	21,539,917
Belgium	19,218,000	19,870,000	20,366,000	19,676,000	19,583,173	19,410,519	20,534,501	20,457,604	21,252,370	21,492,446	22,088,335	22,072,068	23,462,817
Bosnia-Herzegovina	44,209	46,650	59,906	77,266	85,449	122,397	166,645	198,532	222,724	229,643	271,184	303,425	394,516
Bulgaria	(1)	(1)	(1)	(1)	(1)	(1)	57,340	(1)	(1)	(1)	(1)	102,000	120,815
France—													
Coal	22,172,029	23,851,912	25,591,545	25,501,595	25,697,233	25,172,792	26,964,125	27,582,819	28,750,452	30,337,207	31,826,127	32,256,148	32,721,562
Lignite	430,865	451,597	491,573	523,298	481,468	478,189	452,780	437,074	439,448	460,442	529,977	606,564	682,736
Germany—													
Coal	65,386,120	67,342,171	70,237,808	73,715,653	71,372,193	73,852,330	76,741,127	79,169,276	85,690,233	91,054,982	96,309,652	101,639,753	109,290,237
Lignite	16,573,967	17,631,059	19,053,026	20,536,625	21,171,857	21,573,823	22,064,575	24,788,363	26,780,873	29,419,503	31,648,898	34,204,666	40,498,019
Greece	5,500	3,509	----------	----------	8,500	12,000	14,300	14,068	13,812	13,770	17,310	11,363	13,191
Hungary—													
Coal	850,691	937,452	994,812	1,019,352	1,052,214	982,798	1,037,322	1,068,046	1,132,625	1,072,549	1,239,499	1,238,855	[4] 1,447,047
Lignite	1,874,201	1,955,226	2,249,098	2,427,126	2,741,391	2,877,899	3,181,072	3,517,901	3,773,728	3,863,311	4,206,694	4,292,584	[4] 5,128,277
Italy	[5] 366,794	[5] 390,320	[5] 376,326	[5] 289,286	[5] 295,713	[5] 317,249	[5] 271,295	[5] 305,321	[5] 276,197	[5] 314,222	[5] 341,327	[5] 388,534	[5] 479,896
Netherlands	[6] 54,567	[6] 54,402	[6] 58,197	100,359	95,144	100,776	109,278	126,615	137,787	150,145	150,398	212,972	320,204
Portugal	(1)	20,539	(1)	(1)	18,000	22,545	19,666	19,096	16,743	17,338	22,541	22,199	24,066
Rumania	23,336	24,917	25,575	23,028	27,335	17,745	21,792	17,394	17,236	22,408	46,426	67,553	95,163
Russia	5,151,068	6,179,285	5,976,094	6,186,334	6,906,322	7,569,639	8,713,577	9,047,844	9,328,498	11,139,419	12,231,880	13,813,569	15,852,159
Serbia	(1)	(1)	(1)	87,650	(1)	(1)	120,000	60,545	75,340	(1)	80,467	95,632	104,136
Spain—													
Coal	1,037,566	1,014,720	1,212,089	1,262,510	1,429,547	1,480,496	1,659,273	1,739,085	1,867,842	2,019,718	2,434,232	2,599,279	2,582,972
Lignite			26,307	31,187	35,229	41,408	48,460	44,708	55,413	54,232	66,422	70,901	91,133
Sweden	296,000	327,000	187,512	198,033	199,380	199,933	213,634	223,652	225,848	224,343	236,277	239,344	252,320
United Kingdom	172,663,666	179,757,200	184,531,870	188,460,865	184,708,865	166,966,540	191,299,719	192,705,427	198,496,808	205,374,116	205,297,491	223,627,302	228,795,460

[1] Data not available; estimate included in total.
[2] F. M. Santollala reports coal produced in Peru as early as 1816, but no figures of output are available.
[3] First available figures of production given as average for 1911–1913. Some operations have been carried on since 1892.
[4] Exclusive of coal and lignite used for coke and briquets.
[5] Includes a small quantity of bituminous shale.
[6] Government mines only.

TABLE 82.—*Coal and lignite produced in the principal countries of the world in the calendar years 1888–1912*—Continued

	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900
Asia:													
British India	1,736,331	1,977,408	2,203,326	2,365,951	2,578,426	2,603,121	2,869,231	3,596,836	3,925,710	4,131,558	4,682,157	5,175,007	6,216,897
China	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Indo-China		25	(1)	(1)	80,000	108,255	114,000	(1)	136,500	201,000	247,000	276,000	194,000
Japan	2,039,992	2,427,071	2,608,284	3,175,844	3,201,075	3,346,158	4,302,280	4,810,835	5,061,350	5,249,091	6,792,202	6,805,628	7,531,171
Russia	34,867	35,115	38,855	46,844	39,842	44,272	48,978	50,855	49,249	63,593	75,869	161,134	304,274
Turkey	[2] 109,409	[2] 146,366	[2] 137,282	[2] 166,230	[2] 168,727	[2] 173,456	[2] 159,687	[2] 147,445	176,000	176,000	176,000	176,000	466,279
Africa:													
Union of South Africa—													
Cape Colony	29,774	23,817	29,956	25,108	37,838	53,519	63,221	78,557	95,585	115,625	174,050	189,288	180,031
Natal	(1)	26,020	82,856	89,183	144,442	132,010	143,273	162,685	219,575	247,876	394,035	333,969	245,203
Transvaal	(1)	(1)	(1)	(1)	(1)	497,619	717,904	1,028,258	1,303,886	1,451,680	1,730,725	1,574,213	459,100
Oceania:													
Australia—													
New South Wales	3,254,859	3,714,305	3,110,003	4,102,738	3,841,653	3,330,945	3,731,013	3,798,593	3,972,265	4,453,948	4,781,786	4,670,810	5,595,892
Queensland	316,410	269,768	343,774	275,962	269,341	268,647	275,050	328,253	377,351	364,159	414,481	501,938	505,111
South Australia								1,398	3,243	583			
Tasmania	42,244	37,289	51,330	43,950	36,586	35,250	30,989	33,223	42,577	42,873	48,443	43,293	51,446
Victoria	8,867	15,390	24,850	29,624	30,444	97,770	177,986	199,331	236,107	244,863	246,757	266,591	214,992
Western Australia											3,564	55,208	120,310
British Borneo (total)			2,850	6,818	17,587	4,269	18,067	40,615	47,195	35,400	47,581	46,481	22,445
Netherlands East Indies		1,407	5,480	8,018	71,152	66,955	96,741	128,849	142,102	163,263	165,044	185,636	202,729
New Zealand	623,748	595,857	647,627	679,528	684,122	702,647	731,095	738,317	805,576	854,206	921,591	990,887	1,111,549
	475,000,000	486,000,000	516,000,000	538,000,000	544,000,000	534,000,000	559,000,000	590,000,000	608,000,000	639,000,000	673,000,000	735,000,000	777,000,000

[1] Data not available; estimate included in total.

[2] Heraclea basin only.

TABLE 82.—*Coal and lignite produced in the principal countries of the world in the calendar years 1888–1912*—Continued

	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
North America:												
Canada	5,884,264	6,773,624	7,221,483	7,488,403	7,863,389	8,856,436	9,535,755	9,875,844	9,526,728	11,710,924	10,272,351	13,165,748
Mexico	(1)	709,643	700,000	699,989	(1)	767,852	(1)	1,024,563	1,299,979	1,304,111	1,400,000	982,396
United States	266,075,727	273,596,814	324,186,593	319,160,800	356,270,120	375,715,199	435,776,091	377,244,179	418,041,803	455,038,202	450,297,958	484,857,392
South America:												
Brazil									15,000	15,000	15,000	15,000
Chile	(1)	900,000	923,912	751,628	793,927	932,488	832,612	939,836	898,971	1,074,174	1,188,063	1,334,407
Peru	45,000	(1)	36,920	59,920	75,308	79,969	185,565	311,122	321,502	307,320	324,000	278,927
Venezuela	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	[3] 6,322	[3] 6,322
Europe:												
Austria—												
Coal	11,738,840	11,045,039	11,498,111	11,868,245	12,585,263	13,473,307	13,850,420	13,985,902	13,815,743	13,827,225	14,487,550	15,797,890
Lignite	22,473,510	22,139,683	22,157,521	21,987,651	22,692,076	24,167,714	26,262,110	26,618,406	25,941,016	25,079,615	25,152,601	26,283,690
Belgium	22,213,410	22,877,470	23,796,680	24,173,050	23,348,320	23,569,860	23,705,190	23,557,900	23,517,550	23,916,560	23,053,540	22,972,140
Bosnia-Herzegovina	445,007	424,753	467,962	483,617	540,237	594,172	621,179	659,962	696,114	706,659	769,763	852,921
Bulgaria	139,194	130,045	115,250	144,315	170,080	139,844	169,528	162,992	227,362	(1)	245,314	(1)
France—												
Coal	31,633,588	29,365,047	34,217,661	33,502,394	35,218,237	33,457,840	35,988,940	36,632,724	37,115,891	37,634,893	35,520,827	40,349,177
Lignite	691,714	632,423	688,757	665,572	709,467	738,545	764,687	751,660	724,195	715,049	708,764	751,001
Germany—												
Coal	108,539,444	107,473,933	116,637,765	120,815,503	121,298,607	137,117,926	143,185,691	147,671,149	148,788,050	152,827,777	160,747,126	174,875,297
Lignite	44,479,970	43,126,281	45,819,488	48,635,080	52,512,062	56,419,567	62,546,671	67,615,200	68,657,606	69,547,299	73,774,128	80,934,797
Greece	12,670	8,546	8,687	13,500	11,757	11,582	11,719	8,786	3,873	1,500		
Hungary—												
Coal	[4] 1,365,269	[4] 1,162,785	[4] 1,233,410	[4] 1,155,320	[4] 1,088,087	[4] 1,237,730	[4] 1,274,160	[4] 1,210,442	[4] 1,397,424	[4] 1,302,103	[4] 1,290,182	[4] 1,302,405
Lignite	[4] 5,179,829	[4] 5,132,053	[4] 5,271,781	[4] 5,519,349	[4] 6,088,578	[4] 6,365,214	[4] 6,491,477	[4] 7,151,472	[4] 7,658,719	[4] 7,734,166	[4] 8,154,560	[4] 8,284,871
Italy	[5] 425,614	410,970	344,864	359,456	410,050	469,293	449,374	477,479	554,191	560,214	555,694	662,402
Netherlands	310,887	390,778	457,674	446,388	468,377	548,659	722,824	908,201	1,120,852	1,292,289	1,477,171	1,725,394
Portugal	16,000	16,792	8,063	12,805	11,449	6,762	8,824	4,614	6,274	8,149	10,610	15,366
Rumania	120,410	122,487	129,120	130,338	137,024	122,420	163,026	134,495	175,229	174,614	233,688	245,357
Russia	15,934,284	15,767,177	17,132,710	18,600,977	17,164,986	19,922,485	24,687,536	24,603,628	24,476,355	23,349,077	26,683,672	29,055,554
Serbia	125,766	117,866	118,866	139,675	136,553	210,891	215,176	231,992	199,190	213,300	(1)	(1)
Spain—												
Coal	2,651,857	2,713,308	2,695,611	3,022,767	3,202,925	3,208,790	3,695,835	3,885,116	3,870,875	3,812,014	3,663,576	3,852,329
Lignite	95,867	84,242	104,232	100,773	168,994	189,048	191,401	233,160	265,019	245,518	252,051	283,980
Spitzbergen								4,980	2,316	3,443	20,427	19,860
Sweden	271,509	304,733	320,390	320,984	322,384	296,980	305,338	305,206	246,808	302,786	311,809	360,291
United Kingdom	222,562,648	230,739,917	234,031,337	236,158,746	239,918,805	255,097,263	272,129,649	265,726,332	268,007,890	268,677,178	276,255,885	264,596,083
Asia:												
British India	6,742,230	7,543,564	7,557,772	8,348,584	8,552,844	9,940,271	11,326,254	12,974,588	12,060,579	12,240,774	12,919,618	14,942,376
China	(1)	(1)	(1)	(1)	(1)	9,032,660	(1)	8,890,000	11,000,000	13,190,000	13,190,000	13,190,000

[1] Data not available; estimate included in total.
[3] First available figures of production given as average for 1911–1913. Some operations have been carried on since 1892.
[4] Exclusive of coal and lignite used for coke and briquets.
[5] Includes a small quantity of bituminous shale.

TABLE 82.—*Coal and lignite produced in the principal countries of the world in the calendar years 1888–1912*—Continued

	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
Asia—Continued.												
Chosen				[7] 1,067	[7] 3,754	[7] 5,895	(1)	(1)	[7] 45,684	[7] 73,932	[7] 88,279	[7] 84,248
Indo-China	249,000	151,000	210,000	301,500	277,500	315,000	320,000	347,000	(1)	499,000	437,000	430,260
Japan	9,093,540	9,799,040	10,170,042	10,806,472	11,637,367	13,083,306	13,939,229	14,979,687	15,231,525	15,912,965	17,887,631	19,918,211
Russia	592,756	660,910	720,367	984,935	1,472,615	1,779,057	1,279,826	937,695	1,063,587	1,654,420	1,731,408	2,129,452
Turkey	341,221	[8] 334,206	[8] 453,807	[8] 518,874	[8] 592,874	[8] 610,490	762,874	888,600	1,007,692	943,653	1,034,581	803,082
Africa:												
Algeria	213	285	140	105	85							
Rhodesia			42,520	54,138	88,170	94,150	104,392	148,881	155,031	163,354	192,802	196,078
Union of South Africa—												
Cape Colony	186,707	168,213	188,233	156,747	148,879	129,615	130,670	111,461	93,694	88,956	80,756	67,767
Natal	578,336	602,336	725,001	872,074	147,534	1,258,594	1,554,600	1,696,574	1,815,257	2,331,578	2,430,855	2,508,435
Orange Free State			43,806	117,854	1,149,358	343,935	506,290	402,231	493,741	426,162	437,890	476,690
Transvaal	723,153	1,442,718	2,044,491	2,185,427	2,364,836	2,623,931	2,615,805	2,733,077	3,287,335	3,605,504	3,940,532	4,310,819
Oceania:												
Australia—												
New South Wales	6,064,219	6,037,380	6,456,841	6,116,427	6,738,584	7,748,765	8,796,884	9,293,835	7,132,548	8,304,693	8,831,104	10,044,482
Queensland	548,131	509,581	515,951	520,233	537,822	616,511	694,239	707,508	768,720	885,158	905,878	916,631
South Australia	62											
Tasmania	46,167	49,648	49,857	62,090	52,827	53,745	59,836	62,048	67,224	83,768	57,983	54,420
Victoria	212,841	228,778	70,982	123,696	137,677	163,209	140,860	115,791	130,738	375,642	670,591	602,675
Western Australia	119,727	143,145	135,569	140,774	129,408	152,159	144,658	178,060	217,742	266,374	253,910	299,814
British Borneo (total)	54,939	53,211	50,602	58,363	58,770	58,324	71,545	90,231	129,620	154,245	85,992	82,815
Netherlands East Indies	204,763	192,112	210,753	231,159	304,533	371,976	401,364	427,484	493,672	540,810	609,426	608,538
New Zealand	1,247,342	1,384,573	1,442,987	1,562,520	1,611,207	1,757,295	1,860,397	1,890,844	1,941,923	2,232,630	2,099,233	2,212,566
	800,000,000	814,000,000	889,000,000	899,000,000	949,000,000	1,014,000,000	1,118,000,000	1,069,000,000	1,115,000,000	1,166,000,000	1,185,000,000	1,248,000,000

[1] Data not available; estimate included in total.

[7] Exports to Japan.

[8] Heraclea basin only.

DETAILED STATISTICS OF BITUMINOUS COAL BY STATES AND COUNTIES

TABLES OF PRODUCTION, VALUE, MEN EMPLOYED, DAYS WORKED, AND OUTPUT PER MAN IN 1925

The following tables (Nos. 83 to 87) present the detailed data for each coal-producing county from which three or more operators reported production. Where less than three reports were received the figures for two or more counties have been combined to avoid disclosing individual returns.

This series gives the details of value of product, men employed by broad occupational groups, average number of days worked by the mines, and average output per man per day. The producing States appear in alphabetical order, except for Alaska and the small producers: California, Georgia, Idaho, Nebraska, Nevada, North Carolina, and Oregon, which for convenience in printing have been grouped together on pages 509 and 510.

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*

[Note that figures relate only to active mines of commercial size; no canvass of wagon mines was made]

ALABAMA

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Bibb	1,157,709	6,915	23,566	----------	1,188,190	$3,005,000	$2.53	1,135	210	254	290	1,889	224	2.81
Blount	258,934	4,199	7,720	----------	270,853	599,000	2.21	333	42	43	79	497	217	2.51
Etowah	124,477	1,284	2,231	----------	127,992	321,000	2.51	158	19	22	49	248	272	1.89
Fayette and Marion	150,278	1,868	600	----------	152,746	460,000	3.01	200	27	19	55	301	172	2.95
Jefferson	9,308,254	130,304	169,927	93,700	9,702,185	20,664,000	2.13	7,054	1,498	2,112	1,876	12,540	268	2.88
St. Clair	815,327	4,489	31,743	----------	851,559	1,876,000	2.20	508	110	145	139	902	276	3.42
Shelby	731,554	8,633	15,101	----------	755,288	2,343,000	3.10	863	152	182	261	1,458	221	2.34
Tuscaloosa	959,690	26,214	5,972	4,467	996,343	2,098,000	2.11	780	150	185	222	1,337	259	2.88
Walker	5,535,612	365,685	41,373	----------	5,942,670	11,040,000	1.86	4,524	1,038	824	1,477	7,863	219	3.44
Winston	15,069	900	600	----------	16,569	36,000	2.17	41	5	6	10	62	127	1.86
	19,056,904	550,491	298,833	98,167	20,004,395	42,442,000	2.12	15,596	3,251	3,792	4,458	27,097	246	3.00

ARKANSAS

Franklin	180,676	5,170	5,168	----------	191,014	$582,000	$3.05	98	23	17	253	391	137	3.56
Johnson	309,103	2,391	6,886	----------	318,380	1,430,000	4.49	430	98	146	276	950	100	3.34
Logan	196,430	7,767	2,040	----------	206,237	1,139,000	5.52	447	65	88	60	660	151	2.06
Sebastian	458,149	2,944	7,032	----------	468,125	1,468,000	3.13	1,010	178	122	181	1,491	93	3.37
Other counties[1]	32,530	2,188	1,565	----------	36,283	210,000	5.79	103	9	15	19	146	139	1.78
	1,176,888	20,460	22,691	----------	1,220,039	4,829,000	3.96	2,088	373	388	789	3,638	112	2.99

COLORADO

Boulder	533,217	57,655	29,113		619,985	$1,688,000	$2,.72	471	83	92	97	743	172	4.86
Delta	43,026	27,094			70,120	198,000	2.82	53		11	25	89	146	5.41
Elbert and Jefferson	89,923	4,696	9,468		104,087	175,000	1.68	77	13	12	17	119	167	5.21
El Paso	144,447	142,878	9,315		296,640	763,000	2.57	221	34	27	37	319	207	4.50
Fremont	544,372	84,776	5,640		634,788	2,539,000	4.00	808	152	157	192	1,309	185	2.62
Garfield	11,314	18,799	150		30,263	93,000	3.07	32		7	5	44	245	2.81
Gunnison	484,973	3,992	24,915		513,880	1,587,000	3.09	377	59	92	147	675	183	4.16
Huerfano	2,068,380	17,491	16,599		2,102,470	7,134,000	3.39	1,972	353	244	501	3,070	208	3.29
La Plata	52,938	32,029	24	18,050	103,041	295,000	2.86	89	1	24	26	140	200	3.69
Las Animas	2,804,151	44,965	45,830	91,331	2,986,277	8,451,000	2.83	2,596	438	327	521	3,882	217	3.54
Mesa	98,254	26,287	1,470		126,011	309,000	2.45	127	19	15	29	190	180	3.68
Moffat		7,188			7,188	16,000	2.23	10		2	2	14	167	3.08
Montezuma	1,680	3,512			5,192	27,000	5.20	12				12	132	3.27
Rio Blanco		6,234	30		6,264	21,000	3.35	13		1	2	16	230	1.71
Routt	951,400	14,148	44,155		1,009,703	3,552,000	3.52	617	111	120	250	1,098	[2] 83	11.09
Weld	1,566,835	29,224	28,063		1,624,122	3,336,000	2.05	951	182	131	138	1,402	194	5.96
Other counties [3]	59,859	7,130	3,531		70,520	138,000	1.96	46	8	7	20	81	193	4.49
	9,454,769	528,098	218,303	109,381	10,310,551	30,322,000	2.94	8,472	1,453	1,269	2,009	13,203	192	4.07

ILLINOIS

Bond, Clinton, and Marion	1,422,226	95,308	69,678		1,587,212	$3,098,000	$1.95	1,194	201	210	193	1,798	158	5.57
Bureau	354,930	35,613	16,530		407,073	1,242,000	3.05	833	66	110	84	1,093	170	2.19
Cass, Hancock, McDonough, Schuyler, Scott, and Warren		12,755	104		12,859	48,000	3.73	30	4	6	5	45	186	1.54
Christian	3,965,665	163,361	42,838		4,171,864	9,016,000	2.16	2,533	329	354	258	3,474	191	6.28
Edgar, Logan, and Macon	121,419	194,579	7,700		323,698	1,031,000	3.19	736	94	66	71	967	114	2.93
Franklin	13,859,590	98,577	125,147		14,083,314	32,545,000	2.31	9,458	1,854	1,700	1,389	14,401	178	5.49
Fulton	1,831,143	80,967	6,957		1,919,067	4,174,000	2.18	1,422	188	195	282	2,087	173	5.31
Gallatin, Jefferson, Wabash, and White	474,264	18,845	14,928		508,037	1,003,000	1.97	458	94	131	105	788	184	3.51
Greene		2,300			2,300	7,000	3.04	6	1	1	2	10	100	2.30
Grundy and Will	405,373	20,283	8,164		433,820	1,121,000	2.58	499	74	96	62	731	149	3.99
Henry	115,268	37,577	1,669		154,514	385,000	2.49	203	19	13	20	255	175	3.47
Jackson	1,462,588	27,010	11,082		1,500,680	2,990,000	1.99	713	96	252	216	1,277	181	6.48
Knox	1,095	17,529	1,760		20,384	54,009	2.65	44	3	14	14	75	134	2.02
La Salle	345,729	324,708	10,629		681,066	2,247,000	3.30	875	77	89	106	1,147	218	2.73
Livingston		27,241	1,640		28,881	106,000	3.67	50	6	15	14	85	126	2.71
McLean and Woodford	63,209	35,877	10,850		109,936	416,000	3.78	266	27	19	28	340	141	2.29
Macoupin	5,791,836	62,842	118,544		5,973,222	11,739,000	1.97	3,301	670	715	344	5,030	190	6.25
Madison	3,056,616	204,639	74,089		3,335,344	6,785,000	2.03	2,700	489	397	310	3,896	138	6.20
Marshall	3,840	11,151	1,361		16,352	49,000	3.00	65	7	3	9	84	79	2.45
Menard	1,750	49,689	1,920		53,359	155,000	2.90	64	10	5	17	96	158	3.51
Mercer	56,737	18,089	786		75,612	204,000	2.70	147	17	10	18	192	103	3.83
Montgomery	1,976,789	26,841	30,113		2,033,743	4,132,000	2.03	1,951	312	409	225	2,897	123	5.71

[1] Pope and Scott.

[2] In this county the mines have in recent times followed the practice of reducing their forces in periods of dull market and of working every day underground when the tipple works only 1, 2, or 3 days a week. As the figures of days worked represent tipple time, the result is not comparable with the returns for other counties, and the average for the State is affected also.

[3] Archuleta, Jackson, Montrose, and Pitkin.

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*—Con.

ILLINOIS—Continued

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Peoria	772,638	146,896	7,596	----------	927,130	$2,168,000	$2.34	1,079	187	125	139	1,530	152	3.98
Perry	2,079,184	92,065	42,968	----------	2,214,217	4,929,000	2.23	1,454	268	170	297	2,189	154	6.56
Randolph	813,157	31,419	20,044	----------	864,620	1,635,000	1.89	944	153	122	111	1,330	122	5.34
Rock Island	----------	23,139	1,091	----------	24,230	73,000	3.01	41	7	4	8	60	108	3.75
St. Clair	2,552,334	400,101	70,071	----------	3,022,506	5,635,000	1.86	3,269	509	407	416	4,601	115	5.72
Saline	4,121,923	58,181	76,407	----------	4,256,511	9,410,000	2.21	3,749	726	602	578	5,655	151	4.97
Sangamon	5,496,174	324,036	79,488	----------	5,899,698	12,823,000	2.17	6,034	766	730	493	8,023	161	4.56
Shelby	48,185	17,178	5,585	----------	70,948	167,000	2.35	117	19	13	17	166	131	3.27
Stark	----------	5,621	----------	----------	5,621	15,000	2.67	12	2	2	2	18	174	1.79
Tazewell	350,647	97,232	2,418	----------	450,297	1,159,000	2.57	377	47	53	40	517	171	5.10
Vermilion	3,091,480	304,444	22,541	----------	3,418,465	7,566,000	2.21	2,231	261	515	574	3,581	173	5.53
Washington	8,534	21,150	1,845	----------	31,529	78,000	2.47	101	11	11	16	139	134	1.69
Williamson	8,068,099	83,277	139,874	----------	8,291,250	18,287,000	2.21	6,286	940	1,004	1,016	9,246	158	5.68
	62,712,422	3,170,520	1,026,417	----------	66,909,359	146,492,000	2.19	53,242	8,534	8,568	7,479	77,823	161	5.33
INDIANA														
Clay	908,706	43,034	22,675	----------	974,415	$1,804,000	$1.85	339	57	46	328	770	174	7.27
Daviess	21,426	15,100	1,721	----------	38,247	72,000	1.88	44	15	13	18	90	103	4.11
Dubois, Spencer, and Vanderburg	88,083	142,233	7,500	----------	237,816	552,000	2.32	242	45	19	20	326	145	5.03
Fountain and Parke	62,080	8,165	3,207	----------	73,452	155,000	2.11	106	10	8	9	133	170	3.24
Gibson	964,690	30,494	8,582	----------	1,003,766	2,000,000	1.99	671	149	113	109	1,042	188	5.14
Greene	1,240,467	24,701	9,376	----------	1,274,544	2,436,000	1.91	920	153	117	223	1,413	119	7.56
Knox	2,733,071	59,590	29,124	----------	2,821,785	5,415,000	1.92	1,870	391	209	241	2,711	178	5.84
Owen	80,192	156	2,800	----------	83,148	155,000	1.86	3	1	1	76	81	114	8.98
Perry	----------	9,213	----------	----------	9,213	26,000	2.82	9	1	1	3	14	184	3.57
Pike	2,095,202	12,280	28,851	----------	2,136,333	3,817,000	1.79	646	158	118	667	1,589	150	8.94
Sullivan	4,452,489	50,176	70,165	----------	4,572,830	9,399,000	2.06	3,052	754	647	591	5,044	163	5.57
Vermilion	2,242,285	38,911	45,141	----------	2,326,337	4,789,000	2.06	2,011	413	218	223	2,865	170	4.79
Vigo	4,530,394	87,049	164,163	----------	4,781,606	10,758,000	2.25	4,096	647	446	476	5,665	153	5.53
Warrick	834,071	37,215	20,188	----------	891,474	1,506,000	1.69	403	134	75	377	989	121	7.42
	20,253,156	558,317	413,493	----------	21,224,966	42,884,000	2.02	14,412	2,928	2,031	3,361	22,732	159	5.89

IOWA

Adams		4,881			4,881	$19,000	$3.89	16	2	3	4	25	155	1.26
Appanoose	466,491	74,022	4,507		545,020	1,860,000	3.41	2,148	219	124	198	2,689	96	2.11
Boone	325,836	43,097	5,023		373,956	1,481,000	3.96	581	44	160	63	848	171	2.58
Dallas	363,810	9,826	1,527		375,163	1,178,000	3.14	541	91	126	65	823	154	2.97
Davis, Jefferson, and Van Buren	3,054	3,924	126		7,104	18,000	2.53	18	3	4	2	27	130	2.03
Greene, Story, and Webster		10,122	2,000		12,122	36,000	2.97	31	5	7	4	47	160	1.61
Guthrie		4,053			4,053	16,000	3.95	19	1	2	4	26	131	1.19
Jasper	5,615	32,180	3,539		41,334	140,000	3.39	145	19	39	34	237	70	2.48
Keokuk		6,877	5		6,882	21,000	3.05	16	2	3	2	23	145	2.06
Lucas and Warren	551,105	170,248	22,452		743,805	2,110,000	2.84	616	85	121	94	916	212	3.83
Mahaska	291	43,139	513		43,943	131,000	2.98	92	7	7	12	118	152	2.45
Marion	898,191	30,126	19,632		947,949	2,811,000	2.97	707	66	141	86	1,000	233	4.06
Monroe	765,105	24,393	24,869		814,367	2,393,000	2.94	985	199	109	100	1,393	188	3.11
Page and Taylor	4,207	29,254	150		33,611	146,000	4.34	79	9	11	11	110	205	1.49
Polk	322,586	336,266	12,020		670,872	2,179,000	3.25	1,123	158	230	120	1,631	139	2.97
Wapello	1,463	58,292	825		60,580	193,000	3.19	102	9	12	21	144	146	2.88
Wayne	3,900	25,140	161		29,201	75,000	2.57	83	14	3	10	110	128	2.08
	3,711,654	905,840	97,349		4,714,843	14,807,000	3.14	7,302	933	1,102	830	10,167	153	3.02

KANSAS

Bourbon and Leavenworth	25,000	47,500	2,000		74,500	$254,000	$3.41	330	18	88	23	459	264	0.62
Cherokee	1,100,415	60,492	16,328		1,177,235	2,993,000	2.54	626	72	45	406	1,149	173	5.91
Crawford	2,927,549	138,653	41,627		3,107,829	9,125,000	2.94	4,031	422	414	717	5,584	164	3.40
Linn	29,768	3,792	243		33,803	90,000	2.66	95	9	8	7	119	111	2.56
Osage	98,991	31,805	88		130,884	551,000	4.21	380	37	37	35	489	142	1.89
	4,181,723	282,242	60,286		4,524,251	13,013,000	2.88	5,462	558	592	1,188	7,800	169	3.44

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*—Con.

KENTUCKY

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Eastern district:														
Bell	2,719,241	36,104	13,291		2,768,636	$4,710,000	$1.70	2,273	464	404	523	3,664	187	4.03
Boyd	9,700	3,718			13,418	28,000	2.09	46		20	10	76	90	1.97
Breathitt	170,468	10,506	3,534		184,508	293,000	1.59	202	44	17	41	304	204	2.97
Carter	68,945	38,423	63		107,431	195,000	1.82	119	33	18	21	191	210	2.69
Clay	101,887	1,230			103,117	176,000	1.71	168	35	9	51	263	159	2.47
Floyd	4,813,523	54,455	47,804		4,915,782	8,707,000	1.77	2,833	662	522	712	4,729	237	4.38
Harlan	11,110,205	69,681	47,530	126,189	11,353,605	21,634,000	1.91	5,754	1,260	1,249	1,533	9,796	234	4.96
Johnson	1,169,870	14,379	19,372		1,203,621	2,589,000	2.15	801	153	158	206	1,318	244	3.75
Knott	465,566	1,708			467,274	708,000	1.52	181	42	41	52	316	214	6.91
Knox	366,158	12,723	6,691		385,572	627,000	1.63	458	86	81	112	737	155	3.38
Laurel	158,870				158,870	281,000	1.77	163	62	6	29	260	239	2.55
Lee	900	1,740			2,640	6,000	2.27	14		2	3	19	90	1.54
Letcher	5,896,682	62,491	54,747		6,013,920	10,813,000	1.80	2,729	817	704	634	4,884	248	4.97
McCreary	858,513	13,643	1,220		873,376	1,575,000	1.80	718	70	112	129	1,029	185	4.60
Martin	436,436	2,630			439,066	602,000	1.37	141	48	45	40	274	214	7.47
Morgan	21,002	3,202	2,984		27,188	106,000	3.90	45	16	33	69	163	239	.70
Perry	5,785,612	71,243	2,051		5,858,906	10,269,000	1.75	3,235	915	486	866	5,502	221	4.82
Pike	7,070,711	53,901	50,791		7,175,403	12,367,000	1.72	3,483	826	1,377	1,284	6,970	241	4.28
Whitley	682,337	15,163	12,978		710,478	1,497,000	2.11	817	110	162	163	1,252	179	3.17
Other counties [4]	118,102	1,200			119,302	145,000	1.22	60	14	6	16	96	216	5.75
	42,024,728	468,140	263,056	126,189	42,882,113	77,328,000	1.80	24,240	5,657	5,452	6,494	41,843	226	4.54
Western district:														
Daviess	81,924	58,461	709		141,094	202,000	1.43	123		31	18	172	208	3.95
Henderson	338,967	51,339	12,522		402,828	537,000	1.33	290	97	71	59	517	164	4.75
Hopkins	3,781,913	91,556	40,851		3,914,320	5,565,000	1.42	2,261	575	455	1,099	4,390	147	6.05
McLean	71,116	275	4,883		76,274	104,000	1.36	83	22	5	14	124	124	4.96
Muhlenberg	3,645,459	39,231	53,594		3,738,284	5,058,000	1.35	2,977	500	672	547	4,696	151	5.27
Ohio	850,655	11,390	17,478		879,523	1,938,000	2.20	1,098	149	103	316	1,666	115	4.59

Union	955,958	43,700	23,106		1,022,764	1,382,000	1.35	676	123	289	171	1,259	180	4.52
Webster	1,933,512	26,245	11,864		1,971,621	2,663,000	1.35	1,434	238	375	250	2,297	169	5.08
Other counties[4]	36,849	3,000			39,849	48,000	1.20	34		9	17	60	210	3.16
	11,696,353	325,197	165,007		12,186,557	17,497,000	1.44	8,976	1,704	2,010	2,491	15,181	152	5.27
Total all Kentucky	53,721,081	793,337	428,063	126,189	55,068,670	94,825,000	1.72	33,216	7,361	7,462	8,985	57,024	206	4.68
MARYLAND														
Allegany	1,814,377	94,041	6,922		1,915,340	$4,030,000	$2.10	1,797	325	193	314	2,629	214	3.40
Garrett	751,491	17,246	10,495		779,232	1,282,000	1.65	609	130	73	139	951	193	4.25
	2,565,868	111,287	17,417		2,694,572	5,312,000	1.97	2,406	455	266	453	3,580	209	3.61
MICHIGAN														
Bay	225,995	12,680	9,332		248,007	$1,059,000	$4.27	404	120	46	56	626	155	2.56
Saginaw	515,454	2,630	42,142		560,226	2,332,000	4.16	624	160	86	83	953	207	2.84
	741,449	15,310	51,474		808,233	3,391,000	4.20	1,028	280	132	139	1,579	186	2.75
MISSOURI														
Adair	172,388	11,299	5,141		188,828	$477,000	$2.53	212	35	58	30	335	190	2.97
Audrain and Ralls	16,201	6,056	43		22,300	67,000	3.00	58	8	9	8	83	155	1.74
Barton	920,604	5,329	21,911		947,844	2,654,000	2.80	67	6	9	597	679	154	9.08
Bates	253,914	8,346	1,450		263,710	583,000	2.21	111	8	12	143	274	183	5.27
Boone		15,488	39		15,527	55,000	3.54	26	3	4	5	38	184	2.22
Caldwell, Chariton, Cooper, and Platte	18,597	16,175	1,474		36,246	176,000	4.86	113	7	10	16	146	129	1.93
Callaway		28,324	65		28,389	104,000	3.66	78	8	13	29	128	163	1.36
Clay	28,120	22,576	342		51,038	210,000	4.11	120	11	16	14	161	173	1.83
Grundy, Harrison, and Schuyler	5,694	5,521	350		11,565	48,000	4.15	30	4	7	5	46	165	1.52
Henry	60,035	5,594	829		66,458	178,000	2.68	24	2	2	59	87	188	4.07
Lafayette	304,598	42,539	8,282		355,419	1,269,000	3.57	723	64	160	85	1,032	155	2.23
Linn	5,065	10,534	140		15,739	71,000	4.51	71	6	6	8	91	151	1.14
Macon	44,542	16,064	160		60,766	197,000	3.24	131	18	25	16	190	141	2.27
Putnam	10,201	5,536			15,737	47,000	2.99	75	7	12	9	103	78	1.95
Randolph	100,523	10,691	2,538		113,752	343,000	3.02	238	19	54	22	333	148	2.31
Ray	396,765	50,456	2,710		449,931	1,669,000	3.71	917	94	210	116	1,337	189	1.78
St. Clair and Vernon	47,395	571	3,000		50,966	133,000	2.61				51	51	167	5.97
	2,384,642	261,099	48,474		2,694,215	8,281,000	3.07	2,994	300	607	1,213	5,114	166	3.18

[4] Lawrence, Magoffin, and Wayne.

[5] Caldwell, Christian, and Crittenden.

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*—Con.

MONTANA

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Carbon	850,782	34,595	34,229		919,606	$3,081,000	$3.35	654	136	119	176	1,085	152	5.57
Cascade	384,141	16,111	6,582		406,834	1,035,000	2.54	243	55	39	75	412	203	4.86
Dawson		11,491	25		11,516	19,000	1.65	9		2	2	13	168	5.27
Musselshell	955,685	8,041	10,494		974,220	2,545,000	2.61	566	89	181	107	943	166	6.20
Richland	19,748	13,022			32,770	78,000	2.38	26	9	9	12	56	226	2.59
Sheridan	300	12,763			13,063	27,000	2.07	18		1	1	20	186	3.51
Other counties [6]	647,518	35,547	2,612		685,677	1,094,000	1.60	60	4	9	78	151	224	[7] 20.25
	2,858,174	131,570	53,942		3,043,686	7,879,000	2.59	1,576	293	360	451	2,680	171	6.64

NEW MEXICO

Colfax	1,359,626	14,346	12,448	121,733	1,508,153	$4,794,000	$3.18	1,170	240	129	149	1,688	186	4.82
McKinley	743,054	18,985	23,949		785,988	2,740,000	3.49	758	136	121	166	1,181	199	3.34
San Juan		4,177			4,177	9,000	2.15	6			1	7	258	2.31
Other counties [8]	235,414	7,881	15,238		258,533	1,068,000	4.13	314	40	72	142	568	254	1.79
	2,338,094	45,389	51,635	121,733	2,556,851	8,611,000	3.37	2,248	416	322	458	3,444	202	3.68

NORTH DAKOTA (LIGNITE)

Adams	43,544	6,392	1,150		51,086	$108,000	$2.11	26	4	4	10	44	180	6.45
Billings, Golden Valley, and Oliver	10,804	4,763			15,567	28,000	1.80	19		2	6	27	144	4.01
Bowman	27,424	12,783	6,030		46,237	65,000	1.41	26	1	2	11	40	165	7.02
Burke	313,718	13,470	4,530		331,718	622,000	1.88				166	166	145	13.79
Burleigh	155,312	13,811	8,930		178,053	311,000	1.75	123	18	16	43	200	137	6.50

Divide	19,864	5,073			24,937	60,000	2.41	15	3	3	12	33	178	4.25
Dunn		5,405	30		5,435	10,000	1.84	9		1	2	12	139	3.27
Grant	13,666	5,457	352		19,475	35,000	1.80	37	3	4	8	52	107	3.51
Hettinger	16,476	8,522	50		25,048	47,000	1.88	36	2	3	9	50	169	2.96
McLean	73,370	30,301	1,290		104,961	215,000	2.05	63	6	8	57	134	146	5.36
Mercer	277,374	5,757	5,581		288,712	478,000	1.66	96	20	5	72	193	177	8.47
Morton	19,060	30,994	1,005		51,059	91,000	1.78	40	3	2	7	52	195	5.04
Mountrail		3,729			3,729	11,000	2.95	8				8	168	2.78
Stark	31,400	13,500	1,200		46,100	91,000	1.97	46	4	5	10	65	164	4.32
Ward	7,410	49,747	25		57,182	114,000	1.99	84	5	9	12	110	143	3.64
Williams	26,501	48,479	341		75,321	159,000	2.11	90	5	12	14	121	144	4.31
	1,035,923	258,183	30,514		1,324,620	2,445,000	1.85	718	74	76	439	1,307	153	6.61

OHIO

Athens	2,509,034	45,624	44,125		2,598,783	$4,830,000	$1.86	4,518	426	619	502	6,065	109	3.92
Belmont	8,709,910	451,906	66,232		9,228,048	17,994,000	1.95	8,961	946	1,205	906	12,018	162	4.74
Carroll	185,473	115,982	2,630		304,085	641,000	2.11	257	46	45	69	417	181	4.02
Columbiana	294,122	43,236	2,591		339,949	756,000	2.22	385	20	55	51	511	173	3.84
Coshocton	165,726	34,897	1,391		202,014	445,000	2.20	266	34	50	40	390	149	3.48
Guernsey	944,841	115,364	41,526		1,101,731	2,129,000	1.93	2,009	348	468	203	3,028	73	5.01
Harrison	2,744,795	10,585	71,746		2,827,126	4,450,000	1.57	737	81	112	851	1,781	179	8.87
Hocking	802,641	59,621	5,522		867,784	1,505,000	1.73	1,077	105	103	155	1,440	133	4.53
Holmes		12,326	260		12,586	35,000	2.78	23	4	3	2	32	158	2.49
Jackson	82,507	86,715	4,600		173,822	399,000	2.30	187	23	34	34	278	177	3.52
Jefferson	4,483,404	648,211	39,731		5,171,346	10,242,000	1.98	3,761	580	489	897	5,727	187	4.81
Lawrence	1,994	114,073	108		116,175	229,000	1.97	116	7	12	14	149	200	3.89
Mahoning	54	40,743	20		40,817	124,000	3.04	55	7	7	12	81	197	2.55
Medina, Summit, Portage, and Wayne	49,531	22,908	7,968		80,407	270,000	3.36	99	27	14	35	175	146	3.16
Meigs	638,393	21,971	3,981		664,345	1,138,000	1.71	953	150	143	180	1,426	130	3.57
Morgan and Washington	277,118	1,488			278,606	611,000	2.19	214	32	34	21	301	267	3.47
Muskingum	238,928	60,642	2,693		302,263	598,000	1.98	280	18	26	134	458	156	4.21
Noble	343,230	3,120	12,722		359,072	657,000	1.83	466	97	101	49	713	99	5.07
Perry	1,507,370	66,466	16,097		1,589,933	3,121,000	1.96	1,580	147	228	381	2,336	170	4.00
Stark	89,758	295,630	3,005		388,393	1,097,000	2.82	385	66	36	80	567	208	3.29
Tuscarawas	817,116	445,436	34,002		1,296,554	2,626,000	2.03	1,075	167	131	197	1,570	182	4.53
Vinton	44,248	44,807	1,218		90,273	160,000	1.77	140	16	20	19	195	132	3.51
	24,930,193	2,741,751	362,168		28,034,112	54,057,000	1.93	27,544	3,347	3,935	4,832	39,658	151	4.67

[6] Blaine, Custer, Fergus, Gallatin, Hill, Judith Basin, Pondera, Rosebud, Toole, and Wibaux.

[7] The very high average output per man per day in this group of counties is due to the inclusion of the great stripping operations of the Northwestern Improvement Co. at Colstrip, Rosebud County, which also affects materially the average for the State.

[8] Lincoln, Rio Arriba, Sandoval, Santa Fe, and Socorro.

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*—Con.

OKLAHOMA

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Coal	51,671	758	433		52,862	$184,000	$3.48	57	13	7	13	90	172	3.41
Craig, Muskogee, and Wagoner	100,655	2,426			103,081	323,000	3.13	1		1	109	111	198	4.70
Haskell	124,754	510	3,868		129,132	397,000	3.07	19	6	4	136	165	280	2.79
Latimer	250,913	2,375	15,735		269,023	964,000	3.58	389	115	103	90	697	171	2.25
Le Flore	237,631	5,532	7,802		250,965	797,000	3.18	330	76	67	105	578	131	3.32
Okmulgee	535,861	936	4,299		541,096	1,634,000	3.02	1,061	249	136	160	1,606	107	3.16
Pittsburg	734,326	4,483	35,291		774,100	2,703,000	3.49	1,137	386	351	243	2,117	169	2.16
Tulsa	197,090	6,333	2,158		205,581	665,000	3.23	84	8	8	167	267	200	3.84
	2,232,901	23,353	69,586		2,325,840	7,667,000	3.30	3,078	853	677	1,023	5,631	153	2.70

PENNSYLVANIA (BITUMINOUS)

Allegheny	9,847,185	2,073,261	81,912		12,002,358	$25,879,000	$2.17	11,573	1,598	1,378	1,679	16,228	167	4.42
Armstrong	2,923,519	215,185	41,333		3,180,037	5,905,000	1.86	3,445	391	488	541	4,865	167	3.92
Beaver	208,550	105,408	552		314,510	665,000	2.11	215	30	12	100	357	219	4.02
Bedford	432,925	8,466	1,302		442,693	1,094,000	2.47	713	102	70	100	985	137	3.28
Blair and Fulton	179,244	26,681	2,121	14,212	222,258	593,000	2.67	350	42	23	37	452	224	2.20
Bradford and Lycoming	31,602	3,683			35,285	111,000	3.15	53	19	3	9	84	215	1.95
Butler	1,916,491	72,782	7,289		1,996,562	3,810,000	1.91	1,798	283	154	309	2,544	225	3.49
Cambria	14,438,849	2,591,687	142,571	153,408	17,326,515	39,538,000	2.29	15,643	1,943	1,553	2,130	21,269	197	4.14
Center	967,104	50,917	1,934		1,019,955	2,061,000	2.02	1,159	138	104	176	1,577	166	3.90
Clarion	1,415,869	91,663	7,730		1,515,262	2,792,000	1.84	1,780	212	136	261	2,389	201	3.15
Clearfield	5,274,680	242,783	45,831	22,990	5,586,284	11,817,000	2.12	6,816	674	699	1,022	9,211	171	3.55
Clinton	161,129	24,887	2,797		188,813	376,000	1.99	147	16	32	102	297	164	3.88
Elk	981,442	22,870	34,322		1,038,634	2,279,000	2.19	1,340	113	74	171	1,698	181	3.37
Fayette	18,856,923	243,998	491,098	9,227,089	28,819,108	62,668,000	2.17	12,691	2,642	6,792	4,248	26,373	232	4.72
Greene	5,082,311	33,848	45,181	24,625	5,185,965	10,177,000	1.96	1,958	472	719	599	3,748	269	5.15

Huntingdon	637,842	17,130	18,231		673,203	1,803,000	2.68	1,064	130	82	166	1,442	183	2.55
Indiana	7,752,702	228,136	33,273	294,568	8,308,679	16,067,000	1.93	7,010	693	830	1,061	9,594	205	4.22
Jefferson	2,553,728	68,310	35,705	332,722	2,990,465	6,043,000	2.02	3,271	294	408	431	4,404	212	3.21
Lawrence	173,331	57,124	11,314		241,769	795,000	3.29	197	50	40	46	333	259	2.80
McKean and Venango	5,396	7,131			12,527	27,000	2.16	20	6	5	7	38	238	1.39
Mercer	254,051	8,634	13,801		276,486	779,000	2.82	261	49	40	54	404	226	3.03
Somerset	9,208,986	143,500	98,472		9,450,958	18,513,000	1.96	7,103	980	909	1,303	10,295	219	4.20
Tioga	156,242	38,028	3,844		198,114	709,000	3.58	598	82	42	122	844	90	2.60
Washington	14,630,279	462,550	97,699	83,919	15,274,447	32,006,000	2.10	13,282	1,828	1,910	1,843	18,863	167	4.85
Westmoreland	16,365,858	746,184	298,830	3,216,260	20,627,132	41,392,000	1.99	11,211	1,910	2,564	2,819	18,504	226	4.94
	114,456,238	7,584,846	1,517,142	13,369,793	136,928,019	287,899,000	2.10	103,698	14,697	19,067	19,336	156,798	200	4.36

SOUTH DAKOTA (LIGNITE)

Dewey	2,180	2,020			4,200	$12,000	$2.86	13				13	122	2.64
Meade and Ziebach	3,000	2,120			5,120	18,000	3.52	19				19	186	1.45
Perkins		5,127			5,127	12,000	2.34	17				17	111	2.73
	5,180	9,267			14,447	42,000	2.91	49				49	143	2.06

TENNESSEE

Anderson	892,437	7,274	9,192		908,903	$1,489,000	$1.64	709	151	142	184	1,186	223	3.44
Campbell	976,787	52,941	23,923		1,053,651	2,104,000	2.00	1,267	211	135	275	1,888	204	2.73
Claiborne	832,184	8,303	5,553		846,040	1,590,000	1.88	722	165	107	168	1,162	179	4.07
Fentress	457,906	5,220	8,917		472,043	726,000	1.54	289	47	34	70	440	265	4.04
Grundy	319,409	1,254	2,666	36,173	359,502	739,000	2.06	357	78	23	102	560	205	3.14
Hamilton	163,463	6,461	10,604		180,528	424,000	2.35	241	50	35	64	390	214	2.16
Marion	260,683	4,317	5,687		270,687	545,000	2.01	285	43	31	93	452	228	2.63
Morgan	338,407	3,941	11,052	35,590	388,990	655,000	1.68	412	97	137	82	728	237	2.26
Roane	300	3,185	3,278	127,498	134,261	356,000	2.65	89	87	47	34	257	297	1.76
Scott	143,780	10,235	4,746		158,761	228,000	1.44	150	15	36	40	241	182	3.62
Other counties [9]	655,588	10,803	12,552	1,702	680,645	1,221,000	1.79	650	115	98	147	1,010	182	3.71
	5,040,944	113,934	98,170	200,963	5,454,011	10,077,000	1.85	5,171	1,059	825	1,259	8,314	211	3.11

[9] Bledsoe, Cumberland, Overton, Putnam, Rhea, Sequatchie, and White.

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*—Con.

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
TEXAS														
Erath, Maverick, Palo Pinto, Webb, and Wise, bituminous coal	171,612	4,580	6,488		182,680	$673,000	$3.68	516	61	69	102	748	143	1.71
Anderson, Bastrop, Bexar, Henderson, Hopkins, Houston, Lee, Leon, Milam, Nacogdoches, Shelby, Titus, and Wood, lignite	810,517	3,330	11,848		825,695	893,000	1.08	890	133	124	213	1,360	153	3.96
	982,129	7,910	18,336		1,008,375	1,566,000	1.55	1,406	194	193	315	2,108	150	3.19
UTAH														
Carbon	4,162,464	23,665	43,982	247,473	4,477,584	$11,419,000	$2.55	2,343	532	413	765	4,053	187	5.92
Emery	51,839	7,143	25		59,007	172,000	2.91	136	27	15	38	216	38	7.10
Uintah		5,214			5,214	23,000	4.41	8	1	1	3	13	245	1.64
Other counties [10]	135,622	6,213	6,702		148,537	377,000	2.54	83	25	22	29	159	172	5.42
	4,349,925	42,235	50,709	247,473	4,690,342	11,991,000	2.56	2,570	585	451	835	4,441	179	[11] 5.90
VIRGINIA														
Dickenson	1,011,395	7,079	4,113		1,002,587	$1,694,000	$1.66	390	168	113	172	843	290	4.18
Lee	1,500,736	11,971	1,297		1,514,004	2,691,000	1.78	978	211	187	296	1,672	201	4.51
Montgomery	78,969	1,130	498		80,597	285,000	3.54	108	28	11	69	216	226	1.65
Pulaski and Wythe	178,226	2,226	5,608		186,060	715,000	3.84	90	17	39	80	226	263	3.14
Russell	1,819,877	32,267	2,370		1,854,514	3,252,000	1.75	1,012	370	283	420	2,085	256	3.48
Tazewell	2,111,647	8,938	7,530		2,128,115	4,310,000	2.03	1,049	437	529	446	2,461	243	3.56
Wise	5,331,471	49,962	18,513	613,620	6,013,566	10,549,000	1.75	3,059	904	1,280	931	6,174	267	3.65
	12,032,321	113,573	39,929	613,620	12,799,443	23,496,000	1.84	6,686	2,135	2,442	2,414	13,677	254	3.69
WASHINGTON														
King	530,697	54,435	11,204	450	596,786	$2,259,000	$3.79	401	96	178	240	915	209	3.12
Kittitas	836,928	17,301	16,994		871,223	3,232,000	3.71	961	132	86	194	1,373	151	4.20
Lewis	81,086	20,704	5,607		107,397	260,000	2.42	112	19	15	41	187	144	4.00
Pierce	337,570	3,111	12,940	50,033	403,654	1,704,000	4.22	312	85	224	182	803	231	2.17
Other counties [12]	529,910	19,072	9,848		558,830	1,721,000	3.08	273	47	34	94	448	244	5.11
	2,316,191	114,623	56,593	50,483	2,537,890	9,176,000	3.62	2,059	379	537	751	3,726	193	3.52

Barbour	2,038,587	31,569	9,037	19,750	2,098,993	$3,012,000	$1.43	1,528	295	182	242	2,247	188	4.97
Boone	3,292,748	33,789	7,606		3,334,143	5,210,000	1.56	1,751	508	339	467	3,065	219	4.97
Braxton	247,339	25,469	5,072		277,880	409,000	1.47	317	37	88	90	532	174	3.01
Brooke	768,102	763,608	100		1,531,810	3,234,000	2.11	1,045	209	134	143	1,531	178	5.62
Clay	990,246	10,758	9,820		1,010,824	1,693,000	1.67	463	128	160	173	924	251	4.36
Fayette	10,355,662	127,256	47,345	304,704	10,834,967	20,971,000	1.94	6,435	1,757	1,602	1,681	11,475	224	4.21
Gilmer	128,152	3,101	4,732		135,985	187,000	1.38	61	22	6	22	111	257	4.77
Greenbrier	1,282,559	46,884	6,597		1,336,040	2,236,000	1.67	547	145	208	173	1,073	209	5.97
Harrison	5,944,092	233,024	1,622		6,178,738	8,867,000	1.44	3,972	763	664	823	6,222	187	5.32
Kanawha	5,383,248	136,988	24,394		5,544,630	8,703,000	1.57	3,550	1,014	561	941	6,066	208	4.39
Lewis	23,305	30,456	4		53,765	96,000	1.79	69	12	9	13	103	159	3.27
Lincoln	207,475	2,755	990		211,220	320,000	1.52	232	40	25	74	371	140	4.07
Logan	20,173,217	268,126	10,669		20,452,012	31,219,000	1.53	6,894	1,989	2,013	2,054	12,950	263	6.00
McDowell	20,418,936	167,855	141,019	219,181	20,946,991	40,442,000	1.93	8,250	3,174	3,509	4,354	19,287	225	4.83
Marion	4,521,252	65,433	72,658	26,456	4,685,799	8,072,000	1.72	3,390	793	856	750	5,789	172	4.72
Marshall	1,701,131	127,399	16,165		1,844,695	3,477,000	1.88	1,151	168	153	170	1,642	240	4.67
Mason	18,144	31,055	725		49,924	106,000	2.12	62	9	14	13	98	135	3.77
Mercer	3,772,614	29,120	8,107	78,222	3,888,063	7,390,000	1.90	1,599	667	441	814	3,521	240	4.61
Mineral	292,900	4,859	2,806		300,565	548,000	1.82	399	54	53	88	594	148	3.41
Mingo	5,800,111	33,582	5,241		5,838,934	8,837,000	1.51	2,034	741	790	812	4,377	249	5.35
Monongalia	8,399,267	154,557		14,346	8,568,170	12,804,000	1.49	4,394	778	657	712	6,541	241	5.43
Nicholas	196,368	9,927	7,037		213,332	390,000	1.83	238	62	28	73	401	198	2.68
Ohio	2,219,491	288,629	7,038		2,515,158	4,711,000	1.87	1,754	259	217	204	2,434	234	4.42
Preston	1,773,583	18,599	5,195	131,024	1,928,401	3,416,000	1.77	1,157	328	148	281	1,909	218	4.63
Putnam	233,377	2,016	1,076		236,469	363,000	1.54	275	80	75	64	494	260	1.84
Raleigh	11,949,948	111,081	67,613		12,128,642	22,716,000	1.87	5,118	2,162	1,281	1,681	10,242	241	4.91
Randolph	569,390	19,363	2,935	8,421	600,109	951,000	1.58	450	101	55	84	690	173	5.01
Taylor	1,152,844	13,077	454		1,166,375	1,572,000	1.35	793	66	103	141	1,103	223	4.75
Tucker	1,017,205	7,494	41,585	4,046	1,070,330	2,032,000	1.90	515	132	66	77	790	261	5.19
Upshur	803,005	15,413	13,696		832,114	1,106,000	1.33	448	97	72	85	702	222	5.33
Webster	32,600	5,658	50		38,308	82,000	2.14	65	18	8	9	100	128	3.00
Wyoming	2,235,640	18,767	14,354		2,268,701	4,036,000	1.78	1,191	604	256	473	2,524	214	4.19
Other counties [13]	249,136	1,421	8,315		258,872	447,000	1.73	176	33	22	50	281	205	4.49
	118,191,674	2,839,028	544,107	806,150	122,380,959	209,655,000	1.71	60,323	17,240	14,795	17,831	110,189	225	4.94

[10] Grand, Iron, San Juan, Sevier, and Summit.
[11] The calculated output per man per day in Utah is affected by the practice of men going into certain mines to shoot and load coal on days when the tipples and mines as a whole are not in operation.
[12] Cowlitz, Thurston, and Whatcom.
[13] Grant, Hancock, and Wayne.

TABLE 83.—*Production, value, men employed, days worked, and output per man at coal mines in specified States and counties in 1925*—Con.

WYOMING

County	Net tons					Value		Number of employees					Average number of days worked	Average tons per man per day
								Underground			Surface	Total		
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	Haulage and track	All others				
Big Horn and Park		1,899	200		2,099	$6,500	$3.10	3		1	3	7	86	3.49
Campbell, Johnson, and Weston	125,407	11,492	17,576		154,475	395,000	2.56	59	11	22	35	127	272	4.48
Carbon	441,010	8,875	15,791		465,676	1,330,500	2.86	195	44	57	72	368	182	6.96
Fremont, Hot Springs, and Uinta	487,467	15,837	45,702		549,006	1,858,000	3.38	406	86	85	139	716	149	5.16
Lincoln	1,284,660	10,693	54,742		1,350,095	3,954,000	2.93	879	162	167	235	1,443	213	4.38
Sheridan	790,837	36,555	2,161		829,553	1,923,000	2.32	455	88	24	115	682	137	8.90
Sweetwater	3,116,566	30,406	55,356		3,202,328	8,808,000	2.75	1,937	385	245	328	2,895	173	6.38
	6,245,947	115,757	191,528		6,553,232	18,275,000	2.79	3,934	776	601	927	6,238	178	5.90

TABLE 84.—*Coal produced and consumed in Alaska, 1916–1925*

Year	Produced in Alaska, chiefly subbituminous and lignite [1]		Imported from States, chiefly bituminous coal from Washington [2] (net tons)	Imported from foreign countries, chiefly bituminous coal from British Columbia [2] (net tons)	Total coal consumed (net tons)
	Net tons	Value			
1916	12,676	$57,412	44,934	53,672	111,282
1917	54,275	268,438	58,116	56,589	168,980
1918	75,816	413,870	51,520	37,986	165,322
1919	60,894	345,617	57,166	48,708	166,768
1920	61,111	355,668	38,128	45,264	144,503
1921	76,817	496,394	24,278	33,776	134,871
1922	79,275	430,639	28,457	34,251	141,983
1923	119,826	755,469	34,082	43,205	197,113
1924	99,663	559,980	40,161	41,980	181,804
1925	82,868	404,617	37,324	57,230	177,422

[1] Compiled by the Alaska branch of the United States Geological Survey.
[2] Compiled from records of the Bureau of Foreign and Domestic Commerce.

TABLE 85.—*Production, value, men employed, and days worked at coal mines in California, Idaho, Nebraska, and Oregon, 1921–1925*

[California, Idaho, and Oregon produced in each year; Nebraska in 1924 only]

Year	Net tons				Value		Number of employees	Average number of days worked
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Total	Total	Average per ton		
1921	19,015	13,305	6,525	38,845	$181,000	$4.66	141	149
1922	17,011	3,662	6,220	26,893	104,000	3.87	60	250
1923	11,256	1,555	7,255	20,066	79,000	3.94	93	206
1924	8,352	7,851	750	16,953	71,000	4.19	83	156
1925	4,900	7,725	----------	12,625	60,000	4.75	42	174

TABLE 86.—*Production, value, men employed, and days worked at coal mines in Georgia, 1921–1925*

Year	Net tons					Value		Number of employees	Average number of days worked
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Made into coke at mines	Total	Total	Average per ton		
1921	18,755	373	1,979	12,708	33,815	$171,000	$2.14	136	183
1922	41,809	535	2,114	16,178	60,636	246,000	4.06	150	242
1923	48,172	733	2,554	24,161	75,620	327,000	4.32	167	231
1924	58,097	611	1,839	14,400	74,947	271,000	3.62	143	248
1925	55,532	579	1,412	8,651	66,174	220,000	3.32	137	220

TABLE 87.—*Production, value, men employed, and days worked at coal mines in North Carolina, 1921–1925*

Year	Net tons				Value		Number of employees	Average number of days worked
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for steam and heat	Total	Total	Average per ton		
1921	20,000	----------	3,438	23,438	$135,000	$5.76	60	300
1922	68,524	1,500	8,546	78,570	388,000	4.94	127	167
1923	29,419	1,700	4,900	36,019	132,000	3.66	150	275
1924	51,094	1,200	4,800	57,094	224,000	3.92	120	287
1925	58,160	524	6,469	65,153	283,000	4.34	140	272

DETAILED STATISTICS OF PENNSYLVANIA ANTHRACITE

INTERPRETATION OF THE STATISTICS OF PRODUCTION

Unit of measurement.—Tables 88 to 108 present the statistics of the Pennsylvania anthracite industry in 1925. The figures are given in gross tons, the unit of measurement universally employed in the anthracite region.

Fresh-mined, culm-bank, and river coal.—Anthracite is now produced from three sources—from mines, from old culm banks, and from the rivers that drain the anthracite region. The mines are, of course, the primary source. As it leaves the mines the coal consists of fragments of all sizes, from big lumps to fine dust and is further mingled with rock and refuse from the workings underground. To prepare it for the market, the coal is passed through a breaker, in which the refuse and impurities are removed, the largest lumps are crushed, and the cleaned product is sorted into the standard sizes demanded by the trade.

The breakers have always produced some coal of a size too small to be marketed, though with increasing skill in the art of fuel utilization the limit of marketability has moved downward to smaller and smaller sizes. In the early days of the industry some of the chestnut and all the coal below chestnut size was unmarketable and was dumped in great piles or culm banks near the breakers, often without much thought of its future value. Later, when the market became more tolerant of the smaller coal, washeries were built to rework the coal in the culm banks and to recover the pea and as much of the steam sizes as could be disposed of. To-day all coal of the standard steam sizes—buckwheat, rice, and barley—and some material still smaller is sold or used for colliery fuel, and the old culm banks are being eaten away. Yet the counterpart of the old bank is seen in the accumulation of fine sediment from the wash water of the breakers, which careful operators recover in settling pools before allowing the water to escape to the streams. That a market for this material will develop seems reasonably sure.

Even present practice does not extract all the fine particles of coal from the waste water of the breakers and washeries. The blackened creeks and rivers of the region are still transporting millions of tons of carbon, and in the earlier days the quantities thus carried downstream were still greater. The deposition of this load of coal

here and there on the river bottoms has created a third source of anthracite, from which by dredging, some hundreds of thousands of tons of steam sizes are now recovered annually.

Difficulty of separating the statistics.—As all three sources—fresh-mined coal, culm-bank coal, and river coal—contribute to the country's supply of anthracite, it is important to cover them all in order to ascertain the total production. On the other hand, as the methods and cost of production differ greatly, it is important that the three sources be accurately distinguished in the statistics. No difficulty is experienced in separating the figures of production by dredges, because the operation is entirely distinct and is generally conducted by separate companies not connected with the mining corporations. Between the fresh-mined and the culm-bank coal, however, it is difficult to draw a sharp line that can be maintained throughout the statistics of the industry.

Breaker product includes some culm-bank coal.—At first thought it would appear that the output of the breakers might be taken as equivalent to the fresh-mined production and that of the washeries as equivalent to the culm-bank production. But to this statement, though in general true, there are many exceptions. Coal from a washery may be passed through a breaker for further sizing and cleaning. Again, coal from a culm bank may go directly to a breaker for preparation without passing through a washery at all. The labor employed at the washery may at other times be engaged on a breaker of the same company, and the company may be unable to state accurately how the force is divided between its fresh-mined and its culm-bank operations. Yet it is desirable that the particulars of labor employed be exactly comparable with those of culm-bank and fresh-mined coal produced, because one man can produce much more culm-bank coal daily than fresh-mined coal. The difficulty is increased by the varying accounting practices of the companies.

Reconciliation of fresh-mined, culm-bank, and breaker product.—As the best solution of this problem, the individual breaker or washery has in recent years been taken as the producing unit to be canvassed in statistical inquiries. The mining company has been asked to report not its total output of fresh-mined and washery coal, but rather the output of each breaker and each washery, with the related figures of men employed and time worked. From these individual breaker reports an effort was made, by further questioning of the producers, to eliminate the culm-bank coal, and a considerable tonnage was thus eliminated. The resulting statistics were until 1923 published under the captions "fresh-mined coal" and "washery coal." Not satisfied with the accuracy of this separation the senior author noted in the report for 1922, "It is probable that the statistics * * * slightly overstate the quantity of fresh-mined coal. They represent rather the total product of the breakers minus some but not all of the culm-bank coal. * * *"

For 1923 a supplemental inquiry was sent to the producers, in addition to the usual schedules for the operation of each breaker and washery, in which each company was asked for a recapitulation of its culm-bank and fresh-mined production from all operations combined. This supplemental inquiry has been continued for 1924 and 1925, with the results shown in Table 88. In 1925, out of 53,364,725 tons handled by the breakers, 927,000 tons was bank coal. The

fresh-mined coal proper was 52,437,725 tons. The quantity handled by washeries was 922,276 tons, but including the 927,000 tons of bank coal handled in breakers the total produced from culm banks was 1,849,276 tons.

Table captions.—From this check it is clear that the amount of culm-bank coal included in the figures of breaker operations is so large that the statistics should be presented not as "fresh-mined coal" and "culm-bank coal" or "washery coal," but rather as "breaker product" and "washery product." The latter terminology is used in tables of this report.

PRODUCTION OF ANTHRACITE

TABLE 88.—*Comparison of anthracite production in 1923–1925, classified as fresh-mined, culm-bank, and river coal, and as breaker, washery, and dredge product, in gross tons*

	Classified by source of coal	Classified by type of preparation plant	Difference
1923			
Fresh-mined coal	76,135,538		
Breaker product		78,468,375	+2,332,837
Culm-bank coal	[1] 6,348,963		
Washery product		4,016,126	−2,332,837
River coal	853,900		
Dredge product		853,900	
	83,338,401	83,338,401	
1924			
Fresh-mined coal	75,656,355		
Breaker product		76,669,355	+1,013,000
Culm-bank coal	[1] 2,112,813		
Washery product		1,099,813	−1,013,000
River coal	736,959		
Dredge product		736,959	
	78,506,127	78,506,127	
1925			
Fresh-mined coal	52,437,725		
Breaker product		53,364,725	+927,000
Culm-bank coal	[1] 1,849,276		
Washery product		922,276	−927,000
River coal	906,882		
Dredge product		906,882	
	55,193,883	55,193,883	

[1] Includes about 2,300,000 tons of coal put through the breakers in 1923, 1,013,000 tons in 1924, and 927,000 tons in 1925.

TABLE 89.—*Total quantity and total value of anthracite produced, 1890–1925*

Year	Gross tons	Value	Year	Gross tons	Value
1890	41,489,858	[1] $66,383,772	1916	78,195,083	$202,009,561
1895	51,785,122	[1] 82,019,272	1917	88,939,117	283,650,723
1900	51,221,253	[1] 85,757,851	1918	88,237,575	336,480,347
1905	69,339,152	[1] 141,879,000	1919	78,653,751	364,926,950
1910	75,433,246	160,275,302	1920	79,998,437	434,252,198
1911	80,771,488	175,189,392	1921	80,779,867	452,304,903
1912	75,322,855	177,622,626	1922	48,824,127	273,700,125
1913	81,718,680	195,181,127	1923	83,338,401	506,786,768
1914	81,090,631	188,181,399	1924	78,506,127	477,230,852
1915	79,459,876	184,653,498	1925	55,193,883	327,664,512

[1] Excludes value of coal used at collieries.

TABLE 90.—*Anthracite produced, by regions, 1924 and 1925*

Region	Shipments		Local sales		Colliery fuel		Total	
	Gross tons	Value [1]	Gross tons	Value	Gross tons	Value	Gross tons	Value [1]
1924								
Lehigh:								
Breaker product	9,158,262	$60,508,183	463,737	$2,097,582	947,434	$1,595,000	10,569,433	$64,200,765
Washery product	58,915	205,270					58,915	205,270
Dredge product	71,366	89,832	331	2,503			71,697	92,335
	9,288,543	60,803,285	464,068	2,100,085	947,434	1,595,000	10,700,045	64,498,370
Schuylkill:								
Breaker product	18,903,109	122,098,013	545,130	3,525,257	2,579,937	1,143,793	22,028,176	126,767,063
Washery product	471,085	1,701,861	8	48	17,836	12,697	488,929	1,714,606
Dredge product	233,006	222,944	402,290	355,752	15,981	6,654	651,277	585,350
	19,607,200	124,022,818	947,428	3,881,057	2,613,754	1,163,144	23,168,382	129,067,019
Wyoming:								
Breaker product	39,373,464	269,666,940	1,297,372	7,964,562	3,230,281	3,136,420	43,901,117	280,767,922
Washery product	530,354	1,995,516	1,081	2,567	20,534	25,427	551,969	2,023,510
Dredge product	13,985	3,496					13,985	3,496
	39,917,803	271,665,952	1,298,453	7,967,129	3,250,815	3,161,847	44,467,071	282,794,928
Sullivan County: Breaker product	157,435	803,903	7,854	56,122	5,340	10,510	170,629	870,535
Total breaker product	67,592,270	453,077,039	2,314,093	13,643,523	6,762,992	5,885,723	[2] 76,669,355	472,606,285
Total washery product	1,060,354	3,902,647	1,089	2,615	38,370	38,124	1,099,813	3,943,386
Total dredge product	318,357	316,272	402,621	358,255	15,981	6,654	736,959	681,181
Grand total	68,970,981	457,295,958	2,717,803	14,004,393	6,817,343	5,930,501	78,506,127	477,230,852

[1] Value given for shipments is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.
[2] Includes about 1,013,000 tons of culm-bank coal put through the breakers.

TABLE 90.—*Anthracite produced, by regions, 1924 and 1925*—Continued

Region	Shipments		Local sales		Colliery fuel		Total	
	Gross tons	Value [1]	Gross tons	Value	Gross tons	Value	Gross tons	Value [1]
1925								
Lehigh:								
Breaker product	6,455,632	$41,321,141	428,810	$1,926,225	573,897	$899,320	7,458,339	$44,146,686
Washery product	174,487	507,480					174,487	507,480
Dredge product	88,941	86,983					88,941	86,983
	6,719,060	41,915,604	428,810	1,926,225	573,897	899,320	7,721,767	44,741,149
Schuylkill:								
Breaker product	13,207,506	81,977,570	555,808	3,380,797	1,958,905	816,971	15,722,219	86,175,338
Washery product	380,747	1,041,965	2	13	7,788	3,743	388,537	1,045,721
Dredge product	366,242	382,269	371,817	384,990	1,870	3,275	739,929	770,534
	13,954,495	83,401,804	927,627	3,765,800	1,968,563	823,989	16,850,685	87,991,593
Wyoming:								
Breaker product	26,847,626	183,357,027	1,200,184	7,289,523	2,009,183	2,257,227	30,056,993	192,903,777
Washery product	317,042	1,263,233	320	1,600	41,890	49,011	359,252	1,313,844
Dredge product	64,593	67,823	13,419	3,952			78,012	71,775
	27,229,261	184,688,083	1,213,923	7,295,075	2,051,073	2,306,238	30,494,257	194,289,396
Sullivan county: Breaker product	104,659	574,233	5,155	35,731	17,360	32,410	127,174	642,374
Total breaker product	46,615,423	307,229,971	2,189,957	12,632,276	4,559,345	4,005,928	[3] 53,364,725	323,868,175
Total washery product	872,276	2,812,678	322	1,613	49,678	52,754	922,276	2,867,045
Total dredge product	519,776	537,075	385,236	388,942	1,870	3,275	906,882	929,292
Grand total	48,007,475	310,579,724	2,575,515	13,022,831	4,610,893	4,061,957	55,193,883	327,664,512

[1] Value given for shipments is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.
[3] Includes about 927,000 tons of culm-bank coal put through the breakers.

TABLE 91.—*Anthracite produced, 1921–1925*

	Shipments		Local sales		Colliery fuel		Total	
	Gross tons	Value [1]	Gross tons	Value	Gross tons	Value	Gross tons	Value[1]
1921								
Breaker product	67,981,416	$425,945,760	2,209,660	$11,542,880	8,315,615	$8,853,308	78,506,691	$446,341,948
Washery product	1,308,436	4,763,657	14,513	26,114	393,683	522,530	1,716,632	5,312,301
Dredge product	264,711	280,461	287,033	365,212	4,800	4,981	556,544	650,654
	69,554,563	430,989,878	2,511,206	11,934,206	8,714,098	9,380,819	80,779,867	452,304,903
1922								
Breaker product	37,906,503	245,136,576	1,862,398	10,438,339	5,304,701	7,223,726	45,073,602	262,798,641
Washery product	2,600,481	9,311,615	26,349	56,407	316,456	543,753	2,943,286	9,911,775
Dredge product	566,854	706,347	234,646	275,613	5,739	7,749	807,239	989,709
	41,073,838	255,154,538	2,123,393	10,770,359	5,626,896	7,775,228	48,824,127	273,700,125
1923								
Breaker product	69,288,426	468,885,036	2,429,662	13,519,124	6,750,287	8,006,529	[2] 78,468,375	490,410,689
Washery product	3,754,287	15,076,923	8,421	19,124	253,418	468,967	4,016,126	15,565,014
Dredge product	384,999	436,198	462,231	369,520	6,670	5,347	853,900	811,065
	73,427,712	484,398,157	2,900,314	13,907,768	7,010,375	8,480,843	83,338,401	506,786,768
1924								
Breaker product	67,592,270	453,077,039	2,314,093	13,643,523	6,762,992	5,885,723	[2] 76,669,355	472,606,285
Washery product	1,060,354	3,902,647	1,089	2,615	38,370	38,124	1,099,813	3,943,386
Dredge product	318,357	316,272	402,621	358,255	15,981	6,654	736,959	681,181
	68,970,981	457,295,958	2,717,803	14,004,393	6,817,343	5,930,501	78,506,127	477,230,852
1925								
Breaker product	46,615,423	307,229,971	2,189,957	12,632,276	4,559,345	4,005,928	[2] 53,364,725	323,868,175
Washery product	872,276	2,812,678	322	1,613	49,678	52,754	922,276	2,867,045
Dredge product	519,776	537,075	385,236	388,942	1,870	3,275	906,882	929,292
	48,007,475	310,579,724	2,575,515	13,022,831	4,610,893	4,061,957	55,193,883	327,664,512

[1] Value given for shipments is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.
[2] Includes about 2,300,000 tons of culm-bank coal put through the breakers in 1923, 1,013,000 tons in 1924, and 927,000 tons in 1925.

TABLE 92.—*Anthracite shipped from the Schuylkill, Lehigh, and Wyoming regions, 1807–1925*

Year	Schuylkill region		Lehigh region		Wyoming region		Total (gross tons)
	Gross tons	Percentage	Gross tons	Percentage	Gross tons	Percentage	
1807					55		55
1820			365				365
1830	89,984	51.5	41,750	23.9	43,000	24.6	174,734
1840	490,596	56.7	225,313	26.1	148,470	17.2	864,379
1850	1,840,620	54.8	690,456	20.6	827,823	24.6	3,358,899
1860	3,749,632	44.0	1,821,674	21.4	2,941,817	34.6	8,513,123
1870	4,968,157	30.7	3,239,374	20.0	7,974,660	49.3	16,182,191
1880	7,554,742	32.3	4,463,221	19.0	11,419,279	48.7	23,437,242
1890	10,867,822	29.7	6,329,658	17.3	19,417,979	53.0	36,615,459
1900	13,502,732	30.0	6,918,627	15.3	24,686,125	54.7	45,107,484
1910	17,845,020	27.5	8,627,539	13.3	38,433,227	59.2	64,905,786
1920[1]	20,733,428	30.4	9,939,241	14.6	37,517,036	55.0	68,189,705
1921[1]	20,058,168	28.9	9,357,245	13.5	39,901,464	57.6	69,316,877
1922[1]	13,007,033	31.8	5,666,833	13.9	22,189,493	54.3	40,863,359
1923[1]	22,214,576	30.4	10,154,616	13.9	40,777,698	55.7	73,146,890
1924[1]	19,607,200	28.5	9,288,543	13.5	39,917,803	58.0	68,813,546
1925[1]	13,954,495	29.1	6,719,060	14.0	27,229,261	56.9	47,902,816

[1] Includes dredge shipments.

TABLE 93.—*Disposition of total output of anthracite, 1890–1925, in per cent*

Year	Shipments	Local sales	Colliery fuel	Year	Shipments	Local sales	Colliery fuel
1890	88.3	4.3	7.4	1918	86.9	2.7	10.4
1895	89.8	2.3	7.9	1919	86.4	2.7	10.9
1900	88.4	2.1	9.5	1920	85.8	3.2	11.0
1905	88.9	2.0	9.1	1921	86.1	3.1	10.8
1910	87.1	2.4	10.5	1922	84.1	4.4	11.5
1915	86.4	2.4	11.2	1923	88.1	3.5	8.4
1916	86.3	2.5	11.2	1924	87.8	3.5	8.7
1917	87.1	2.4	10.5	1925	87.0	4.7	8.3

TABLE 94.—*Anthracite produced, by fields, 1913–1925, in gross tons*

[The figures of breaker product include a certain quantity of culm-bank coal, which in 1925 amounted to about 927,000 tons]

Year	Northern field [1]				Eastern middle field			Western middle field			
	Breakers	Washeries	Dredges	Total	Breakers	Washeries	Total	Breakers	Washeries	Dredges	Total
1913	45,117,000	1,915,000	42,000	47,074,000	7,479,000	36,000	7,515,000	15,584,000	133,000	13,000	15,730,000
1914	45,462,000	1,782,000	3,000	47,247,000	7,831,000	35,000	7,866,000	14,562,000	215,000	12,000	14,789,000
1915	43,600,000	2,249,000		45,849,000	7,664,000	87,000	7,751,000	14,564,000	327,000	27,000	14,918,000
1916	41,296,000	2,374,000	4,000	43,674,000	7,030,000	77,000	7,107,000	15,666,000	532,000	28,000	16,226,000
1917	46,201,000	3,432,000	3,000	49,636,000	7,576,000	85,000	7,661,000	17,821,000	1,074,000	44,000	18,939,000
1918	45,213,000	3,529,000	3,000	48,745,000	7,631,000	112,000	7,743,000	17,289,000	1,486,000	102,000	18,877,000
1919	41,650,000	1,801,000	18,000	43,469,000	7,284,000	288,000	7,572,000	14,983,000	871,000	247,000	16,101,000
1920	40,398,000	2,939,000	29,000	43,366,000	7,010,000	115,000	7,125,000	16,123,000	942,000	240,000	17,305,000
1921	44,629,000	920,000	35,000	45,584,000	6,862,000	78,000	6,940,000	16,674,000	319,000	199,000	17,192,000
1922	24,971,000	1,032,000	48,000	26,051,000	4,121,000	36,000	4,157,000	9,651,000	995,000	194,000	10,840,000
1923	43,804,000	1,859,000	28,000	45,691,000	7,039,000	122,000	7,161,000	16,548,000	1,019,000	194,000	17,761,000
1924	44,071,000	552,000	14,000	44,637,000	6,808,000	6,000	6,814,000	15,136,000	423,000	204,000	15,763,000
1925	30,184,000	359,000	78,000	30,621,000	4,909,000		4,909,000	10,633,000	334,000	248,000	11,215,000

Year	Southern field				Total			
	Breakers	Washeries	Dredges	Total	Breakers	Washeries	Dredges	Total
1913	10,545,000	776,000	79,000	11,400,000	78,725,000	2,860,000	134,000	81,719,000
1914	10,608,000	493,000	88,000	11,189,000	78,463,000	2,525,000	103,000	81,091,000
1915	10,361,000	484,000	97,000	10,942,000	76,189,000	3,147,000	124,000	79,460,000
1916	10,043,000	1,034,000	111,000	11,188,000	74,035,000	4,017,000	143,000	78,195,000
1917	10,961,000	1,637,000	105,000	12,703,000	82,559,000	6,228,000	152,000	88,939,000
1918	10,369,000	2,356,000	148,000	12,873,000	80,502,000	7,483,000	253,000	88,238,000
1919	10,245,000	913,000	354,000	11,512,000	74,162,000	3,873,000	619,000	78,654,000
1920	10,137,000	1,673,000	392,000	12,202,000	73,608,000	5,669,000	661,000	79,998,000
1921	10,341,000	400,000	323,000	11,064,000	78,507,000	1,717,000	556,000	80,780,000
1922	6,331,000	880,000	565,000	7,776,000	45,074,000	2,943,000	807,000	48,824,000
1923	11,077,000	1,016,000	632,000	12,725,000	78,468,000	4,016,000	854,000	83,338,000
1924	10,654,000	119,000	519,000	11,292,000	76,669,000	1,100,000	737,000	78,506,000
1925	7,639,000	229,000	581,000	8,449,000	53,365,000	922,000	907,000	55,194,000

[1] Includes Sullivan County, which in 1925 contributed 127,000 tons of breaker product.

TABLE 95.—*Anthracite produced, by counties, 1924 and 1925*

County	Shipments		Local sales		Colliery fuel		Total	
	Gross tons	Value	Gross tons	Value	Gross tons	Value	Gross tons	Value [1]
1924								
Carbon	2,106,000	$13,315,000	55,000	$295,000	203,000	$433,000	2,364,000	$14,043,000
Columbia	503,000	2,831,000	25,000	79,000	95,000	133,000	623,000	3,043,000
Dauphin	851,000	5,369,000	329,000	439,000	115,000	18,000	1,295,000	5,826,000
Lackawanna	16,435,000	109,081,000	441,000	2,876,000	1,064,000	1,068,000	17,940,000	113,025,000
Luzerne	27,284,000	189,144,000	1,196,000	6,528,000	2,603,000	2,709,000	31,083,000	198,381,000
Northumberland	5,298,000	32,052,000	177,000	1,053,000	692,000	313,000	6,077,000	33,418,000
Schuylkill	15,598,000	99,576,000	414,000	2,481,000	1,977,000	1,185,000	17,989,000	103,242,000
Sullivan	153,000	804,000	8,000	56,000	5,000	11,000	171,000	871,000
Berks,[2] Cumberland,[2] and York [2]	13,000	10,000	53,000	63,000			66,000	73,000
Susquehanna and Wayne	815,000	5,114,000	20,000	134,000	63,000	61,000	898,000	5,309,000
	68,971,000	457,296,000	2,718,000	14,004,000	6,817,000	5,931,000	78,506,000	477,231,000
1925								
Berks [2]	20,000	16,000	44,000	80,000			64,000	96,000
Carbon	1,554,000	9,109,000	45,000	274,000	110,000	262,000	1,709,000	9,645,000
Columbia	294,000	1,752,000	24,000	63,000	50,000	53,000	368,000	1,868,000
Dauphin	597,000	3,533,000	288,000	407,000	82,000	35,000	967,000	3,975,000
Lackawanna	11,169,000	73,977,000	415,000	2,701,000	654,000	763,000	12,238,000	77,441,000
Luzerne	18,904,000	130,189,000	1,145,000	6,018,000	1,705,000	1,922,000	21,754,000	138,129,000
Northumberland	3,883,000	22,618,000	186,000	1,051,000	505,000	216,000	4,574,000	23,885,000
Schuylkill	11,031,000	66,885,000	402,000	2,343,000	1,474,000	763,000	12,907,000	69,991,000
Sullivan	105,000	574,000	5,000	36,000	17,000	32,000	127,000	642,000
Cumberland,[2] Lancaster,[2] and York [2]	92,000	114,000	13,000	7,000			105,000	121,000
Montour,[2] Northampton,[2] and Wayne	358,000	1,813,000	9,000	43,000	14,000	16,000	381,000	1,872,000
	48,007,000	310,580,000	2,576,000	13,023,000	4,611,000	4,062,000	55,194,000	327,665,000

[1] Value given for shipments is value at which coal left possession of producing company f. o. b. mines, and does not include margins of separately incorporated selling companies.
[2] Counties producing dredge coal only.

NUMBER OF OPERATIONS

TABLE 96.—*Number of anthracite breakers, washeries, and dredges active, 1918–1925*

	1918	1919	1920	1921	1922	1923	1924	1925
Lehigh:								
Breakers	34	34	36	33	32	33	33	32
Washeries	11	12	10	11	11	12	6	6
Dredges		3	3	1	4	3	3	2
	45	49	49	45	47	48	42	40
Schuylkill:								
Breakers	78	80	78	79	78	78	78	76
Washeries	25	24	19	17	24	26	13	7
Dredges	31	74	56	59	56	56	45	49
	134	178	153	155	158	160	136	132
Wyoming:								
Breakers	139	142	135	130	131	144	133	128
Washeries	40	42	33	27	34	44	22	22
Dredges	1	3	1	2	2	1	1	2
	180	187	169	159	167	189	156	152
Sullivan County: Breakers	3	3	3	3	2	2	3	2
Total breakers	254	259	252	245	243	257	247	238
Total washeries	76	78	62	55	69	82	41	35
Total dredges	32	80	60	62	62	60	49	53
Grand total	362	417	374	362	374	399	337	326

SHIPMENTS, BY SOURCE AND SIZES

TABLE 97.—*Anthracite shipped from breakers, washeries, and dredges, 1916–1925, in gross tons* [1]

Year	Breakers [2]	Washeries [2]	Dredges	Total
1916	64,368,000	3,104,000	29,000	67,501,000
1917	72,077,000	5,366,000	47,000	77,490,000
1918	70,090,000	6,506,000	125,000	76,721,000
1919	64,632,000	3,017,000	323,000	67,972,000
1920	63,599,000	4,616,000	396,000	68,611,000
1921	67,981,000	1,308,000	265,000	69,554,000
1922	37,907,000	2,600,000	567,000	41,074,000
1923	69,289,000	3,754,000	385,000	73,428,000
1924	67,592,000	1,060,000	319,000	68,971,000
1925	46,615,000	872,000	520,000	48,007,000

[1] Includes shipments from Sullivan County.
[2] In recent years a considerable tonnage of culm-bank coal has been handled in the breakers, so that the figures of shipments from washeries are less than the sales of culm-bank coal.

TABLE 98.—*Anthracite shipped from breakers and washeries, by sizes, 1916–1925* [1]

Year	Domestic		Pea		Steam		Total (gross tons)
	Gross tons	Percentage of total	Gross tons	Percentage of total	Gross tons	Percentage of total	
1916	40,556,000	60.5	7,468,000	11.1	19,006,000	28.4	67,030,000
1917	47,003,000	61.0	6,774,000	8.8	23,239,000	30.2	77,016,000
1918	45,795,000	60.1	6,417,000	8.4	23,972,000	31.5	76,184,000
1919	43,166,000	64.2	6,185,000	9.2	17,925,000	26.6	67,276,000
1920	42,784,000	63.1	5,402,000	8.0	19,607,000	28.9	67,793,000
1921	45,906,000	66.5	5,828,000	8.4	17,318,000	25.1	69,052,000
1922	25,334,000	62.9	3,256,000	8.1	11,707,000	29.0	40,297,000
1923	46,330,000	63.7	5,882,000	8.1	20,550,000	28.2	72,762,000
1924	44,761,000	65.3	5,674,000	8.3	18,060,000	26.4	68,495,000
1925	31,468,000	66.4	2,669,000	5.6	13,246,000	28.0	47,383,000

[1] Exclusive of Sullivan County and dredge coal.

TABLE 99.—*Anthracite shipped, by sizes, 1916–1925* [1]

	Sizes above pea		Pea		Sizes below pea		Total (gross tons)
	Gross tons	Percentage of total	Gross tons	Percentage of total	Gross tons	Percentage of total	
1916: Breaker product	40,575,269	63.1	7,223,529	11.2	16,568,956	25.7	64,367,754
Total shipments	40,747,215	60.4	7,520,804	11.1	19,233,344	28.5	67,501,363
1917: Breaker product	46,640,319	64.7	6,298,870	8.7	19,138,145	26.6	72,077,334
Total shipments	47,195,895	60.9	6,824,003	8.8	23,470,145	30.3	77,490,043
1918: Breaker product	45,323,253	64.7	5,798,401	8.3	18,968,580	27.0	70,090,234
Total shipments	45,994,903	60.0	6,471,381	8.4	24,254,873	31.6	76,721,157
1919: Breaker product	42,937,454	66.4	5,884,492	9.1	15,809,757	24.5	64,631,703
Total shipments	43,349,551	63.8	6,237,398	9.2	18,385,346	27.0	67,972,295
1920: Breaker product	42,209,170	66.4	5,008,050	7.9	16,381,463	25.7	63,598,683
Total shipments	42,984,656	62.6	5,457,588	8.0	20,168,519	29.4	68,610,763
1921: Breaker product	45,796,115	67.4	5,720,904	8.4	16,464,397	24.2	67,981,416
Total shipments	46,051,199	66.2	5,865,379	8.4	17,637,985	25.4	69,554,563
1922: Breaker product	25,046,679	66.1	2,967,355	7.8	9,892,469	26.1	37,906,503
Total shipments	25,409,723	61.8	3,278,136	8.0	12,385,979	30.2	41,073,838
1923: Breaker product	45,651,693	65.9	5,544,915	8.0	18,091,818	26.1	69,288,426
Total shipments	46,479,297	63.3	5,928,618	8.1	21,019,797	28.6	73,427,712
1924: Breaker product	44,566,747	65.9	5,593,926	8.3	17,431,597	25.8	67,592,270
Total shipments	44,825,550	65.0	5,689,000	8.2	18,456,431	26.8	68,970,981
1925: Breaker product	31,359,250	67.3	2,608,744	5.6	12,647,429	27.1	46,615,423
Total shipments	31,518,719	65.7	2,682,372	5.6	13,806,384	28.7	48,007,475

[1] Includes shipments of dredge coal.

TABLE 100.—*Anthracite shipped, by regions and sizes, 1924 and 1925, in gross tons*

[The figures of shipments from breakers include a considerable tonnage of culm-bank coal handled in the breakers]

Size	Lehigh region			Schuylkill region			Wyoming region			Sullivan County breakers	Total	
	Breakers	Washeries	Dredges	Breakers	Washeries	Dredges	Breakers	Washeries	Dredges		Quantity	Percentage of total
1924												
Lump				13,209							13,209	
Broken	90,451	658		318,787	3,767		1,412,128	4,932		91	1,830,814	2.6
Egg	1,203,604	2,019		2,199,888	15,660		6,391,223	18,726		12,079	9,843,199	14.3
Stove	1,798,113	2,589		3,891,146	19,032		9,270,761	33,993		22,872	15,038,506	21.8
Chestnut	2,392,208	4,003		4,587,386	70,714		10,933,462	82,710		29,339	[1] 18,099,822	26.3
Pea	866,782	6,065		1,912,981	48,601	243	2,799,096	40,165		15,067	5,689,000	8.2
Buckwheat No. 1	1,251,516	7,766	453	2,909,763	84,549	2,609	4,155,074	79,795			8,491,525	12.3
Buckwheat No. 2 (rice)	650,698	8,881	985	1,075,329	89,426		2,627,539	131,670			4,584,528	6.7
Buckwheat No. 3 (barley)	793,073	26,934	46,615	1,861,944	137,533	158,012	1,496,305	120,442			4,640,858	6.7
Boiler	1,687		23,313	382	157	12,014	69,005	680			107,238	.2
Other [2]	110,130			132,294	1,646	60,128	218,871	17,241	13,985	77,987	632,282	.9
	9,158,262	58,915	71,366	18,903,109	471,085	233,006	39,373,464	530,354	13,985	157,435	68,970,981	100.0
1925												
Lump				4,693							4,693	
Broken	72,172			191,372			967,076	206		392	1,231,218	2.6
Egg	739,665	4,504		1,315,033	3,556		4,246,372	11,598		9,181	6,329,909	13.2
Stove	1,419,865	6,299		2,950,120	8,641		6,961,585	11,410		17,881	11,375,801	23.7
Chestnut	1,737,574	10,974		3,293,549	33,558		7,409,369	68,723		23,351	[3] 12,577,098	26.2
Pea	478,830	12,745		985,863	33,006	1,064	1,131,983	26,813		12,068	2,682,372	5.6
Buckwheat No. 1	827,500	25,972		1,906,688	75,362	6,953	3,040,528	38,072			5,921,075	12.3
Buckwheat No. 2 (rice)	492,854	30,362		1,043,630	84,905		1,934,885	84,906			3,671,542	7.6
Buckwheat No. 3 (barley)	551,760	83,631	52,765	1,381,460	141,627	169,073	949,849	65,526			3,395,691	7.1
Boiler	1,152		36,176	21		26,178	34,304				97,831	.2
Other [2]	134,260			135,077	92	162,974	171,675	9,788	64,593	41,786	720,245	1.5
	6,455,632	174,487	88,941	13,207,506	380,747	366,242	26,847,626	317,042	64,593	104,659	48,007,475	100.0

[1] Includes 887,392 tons of "range" coal. [2] Includes buckwheat No. 4, silt, culm, screenings, and mine-run coal. [3] Includes 5,248 tons of "range" coal.

TABLE 101.—*Percentage of anthracite shipped, by regions and sizes, 1919–1925*

Region and size of coal	Percentage of total						
	1919	1920	1921	1922	1923	1924	1925
Lehigh:							
Lump	3.3	3.8	1.9	1.7	1.7	1.0	1.1
Broken	12.3	12.6	14.1	12.0	14.0	13.0	11.1
Egg	16.4	16.5	19.0	17.8	16.8	19.4	21.2
Stove	24.4	24.4	25.6	24.7	24.3	25.8	26.0
Chestnut	10.5	10.4	10.7	11.0	9.3	9.4	7.3
Pea	66.9	67.7	71.3	67.2	66.1	68.6	66.7
Total domestic							
Buckwheat No. 1	13.3	14.1	13.5	14.2	14.2	13.5	12.7
Buckwheat No. 2 (rice)	7.5	7.3	6.7	7.7	7.7	7.1	7.8
Buckwheat No. 3 (barley)	8.5	9.0	7.2	8.6	10.0	9.3	10.2
Boiler	1.4	.5	.2	1.3	.5	.3	.6
Other	2.4	1.4	1.1	1.0	1.5	1.2	2.0
Total steam	33.1	32.3	28.7	32.8	33.9	31.4	33.3
Schuylkill:							
Lump	.1	.1	.1	(1)	(1)	(1)	(1)
Broken	3.8	4.5	3.2	3.0	3.2	1.6	1.4
Egg	12.3	11.2	12.6	9.6	11.5	11.3	9.5
Stove	17.2	14.9	18.9	17.0	16.6	20.0	21.2
Chestnut	22.5	21.7	24.2	22.2	22.6	23.8	23.8
Pea	11.1	10.2	10.3	9.2	10.1	10.0	7.3
Total domestic	67.0	62.6	69.3	61.0	64.0	66.7	63.2
Buckwheat No. 1	17.0	17.6	17.4	16.9	17.0	15.3	14.3
Buckwheat No. 2 (rice)	8.0	8.9	6.2	7.5	7.2	5.9	8.1
Buckwheat No. 3 (barley)	6.9	8.2	6.1	10.7	10.4	11.0	12.1
Boiler	.4	2.0	.4	.5	.1	.1	.2
Other	.7	.7	.6	3.4	1.3	1.0	2.1
Total steam	33.0	37.4	30.7	39.0	36.0	33.3	36.8
Wyoming:							
Lump	4.7	5.3	4.1	5.2	6.3	3.5	3.6
Broken	15.9	16.9	16.0	16.0	17.1	16.1	15.6
Egg	21.8	20.2	22.8	22.3	20.2	23.3	25.6
Stove	27.6	27.5	28.3	26.0	26.5	27.6	27.5
Chestnut	7.7	6.0	6.9	6.5	6.6	7.1	4.3
Pea	77.7	75.9	78.1	76.0	76.7	77.6	76.6
Total domestic							
Buckwheat No. 1	10.3	11.0	11.5	11.4	10.8	10.6	11.3
Buckwheat No. 2 (rice)	7.1	7.8	6.6	7.0	7.3	6.9	7.4
Buckwheat No. 3 (barley)	3.4	3.6	3.2	4.3	4.4	4.1	3.7
Boiler	.9	1.0	.5	.6	.3	.2	.1
Other	.6	.7	.1	.7	.5	.6	.9
Total steam	22.3	24.1	21.9	24.0	23.3	22.4	23.4
Sullivan:							
Lump							
Broken	4.5	4.5	4.3	4.2	5.0	.1	.4
Egg	9.9	9.0	10.7	6.4	9.9	7.7	8.8
Stove	14.3	14.0	18.6	9.9	16.4	14.5	17.1
Chestnut	20.6	20.4	27.6	15.4	21.8	18.6	22.3
Pea	13.7	12.5	14.6	9.1	15.8	9.6	11.5
Total domestic	63.0	60.4	75.8	45.0	68.9	50.5	60.1
Buckwheat No. 1							
Buckwheat No. 2 (rice)							
Buckwheat No. 3 (barley)							
Boiler and other	37.0	39.6	24.2	55.0	31.1	49.5	39.9
Total steam	37.0	39.6	24.2	55.0	31.1	49.5	39.9
Grand total:							
Lump	(1)	.1	(1)	(1)	(1)	(1)	(1)
Broken	4.2	4.8	3.6	4.0	4.8	2.7	2.6
Egg	14.3	14.5	14.7	13.3	14.9	14.3	13.2
Stove	19.6	18.0	21.1	19.9	18.6	21.8	23.7
Chestnut	25.6	25.2	26.8	24.6	25.0	26.2	26.2
Pea	9.2	8.0	8.4	8.0	8.1	8.2	5.6
Total domestic	72.9	70.6	74.6	69.8	71.4	73.2	71.3
Buckwheat No. 1	12.6	13.4	13.4	13.5	13.1	12.3	12.3
Buckwheat No. 2 (rice)	7.4	8.0	6.5	7.2	7.3	6.7	7.6
Buckwheat No. 3 (barley)	5.2	5.7	4.6	6.9	7.0	6.7	7.1
Boiler	.8	1.2	.4	.7	.2	.2	.2
Other	1.1	1.1	.5	1.9	1.0	.9	1.5
Total steam	27.1	29.4	25.4	30.2	28.6	26.8	28.7

[1] Less than 0.1 per cent.

TABLE 102.—*Value of anthracite shipped, by regions and sizes, 1924–25* [1]

1924

Size	Lehigh region						Schuylkill region					
	Breakers		Washeries		Dredges		Breakers		Washeries		Dredges	
	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton
Lump							$68,450	$5.18				
Broken	$752,367	$8.32	$5,329	$8.10			2,775,392	8.71	$33,715	$8.95		
Egg	16,570,899	8.78	18,096	8.96			19,248,304	8.75	129,997	8.30		
Stove	16,367,548	9.10	23,646	9.13			35,637,104	9.16	163,780	8.61		
Chestnut	21,397,606	8.95	36,307	9.07			41,275,900	9.00	578,305	8.18		
Pea	5,117,764	5.90	37,053	6.11			10,869,673	5.68	255,214	5.25	$931	$3.83
Buckwheat No. 1	3,703,720	2.96	24,578	3.16	$907	$2.00	7,825,702	2.69	214,240	2.53	4,024	1.54
Buckwheat No. 2 (rice)	1,353,806	2.08	20,353	2.29	831	.84	2,049,388	1.91	160,620	1.80		
Buckwheat No. 3 (barley)	1,176,545	1.48	39,908	1.48	53,127	1.14	2,289,486	1.23	164,815	1.20	151,264	.96
Boiler	7,884	4.67			34,967	1.50	500	1.31	733	4.67	10,586	.88
Other	60,044	.55					58,114	.43	442	.27	56,139	.93
	60,508,183	6.61	205,270	3.48	89,832	1.26	122,098,013	6.46	1,701,861	3.61	222,944	.96

Size	Wyoming region						Sullivan County		All regions	
	Breakers		Washeries		Dredges		Breakers		Total	Average per ton
	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton		
Lump									$68,450	$5.18
Broken	$10,911,739	$7.73	$35,459	$7.19			$772	$8.48	14,514,773	7.93
Egg	52,991,348	8.29	148,892	7.95			99,694	8.25	83,207,230	8.45
Stove	78,779,959	8.50	296,355	8.72			197,080	8.62	131,465,472	8.74
Chestnut	91,131,332	8.34	696,769	8.42			259,259	8.84	[2] 155,375,478	8.57
Pea	15,257,100	5.45	202,449	5.04			88,705	5.89	31,828,889	5.59
Buckwheat No. 1	12,942,685	3.11	204,461	2.50					24,920,317	2.93
Buckwheat No. 2 (rice)	5,016,332	1.91	242,189	1.84					8,843,519	1.93
Buckwheat No. 3 (barley)	1,923,239	1.29	157,673	1.31					5,956,057	1.28
Boiler	86,438	1.25	680	1.00					141,788	1.32
Other	626,768	2.86	10,589	.61	$3,496	$2.50	158,393	2.03	973,985	1.54
	269,666,940	6.85	1,995,516	3.76	3,496	2.50	803,903	5.11	457,295,958	6.63

[1] Value given is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.
[2] Includes $7,647,592, value of "range" coal.

TABLE 102.—*Value of anthracite shipped, by regions and sizes, 1924–25* [1]—Continued

1925

Size	Lehigh region						Schuylkill region					
	Breakers		Washeries		Dredges		Breakers		Washeries		Dredges	
	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton
Lump							$41,545	$8.85				
Broken	$580,028	$8.04					1,658,867	8.67				
Egg	6,368,442	8.61	$39,625	$8.80			11,339,571	8.62	$29,337	$8.25		
Stove	12,806,296	9.02	57,708	9.16			26,728,563	9.06	74,772	8.65		
Chestnut	15,028,502	8.65	94,522	8.61			28,821,979	8.75	275,518	8.21		
Pea	2,622,304	5.48	67,965	5.33			5,232,607	5.30	159,357	4.83	$4,025	$3.78
Buckwheat No. 1	2,096,334	2.53	61,238	2.36			4,542,544	2.38	164,000	2.18	17,286	4.29
Buckwheat No. 2 (rice)	948,220	1.92	60,974	2.01			1,868,490	1.79	150,274	1.77		
Buckwheat No. 3 (barley)	800,207	1.45	125,448	1.50	$53,042	$1.10	1,091,372	1.22	188,667	1.33	166,954	.99
Boiler	3,122	2.71			28,941	.80	29	1.39			26,950	1.03
Other	67,686	.50					52,003	.38	40	.43	167,054	1.03
	41,321,141	6.40	507,480	2.91	86,983	.98	81,977,570	6.21	1,041,965	2.74	382,269	1.04

Size	Wyoming region						Sullivan County		All regions	
	Breakers		Washeries		Dredges		Breakers		Total	Average per ton
	Total	Average per ton	Total	Average per ton	Total	Average per ton	Total	Average per ton		
Lump									$41,545	$8.85
Broken	$7,528,755	$7.78	$1,884	$9.15			$3,345	$8.53	9,772,879	7.94
Egg	35,134,773	8.27	99,745	8.60			77,668	8.46	53,089,161	8.39
Stove	60,072,171	8.63	106,823	9.36			152,588	8.53	99,998,921	8.79
Chestnut	61,592,759	8.31	566,887	8.25			202,141	8.66	[3] 106,582,308	8.47
Pea	5,820,402	5.14	136,790	5.10			60,409	5.01	14,103,859	5.26
Buckwheat No. 1	7,756,901	2.55	96,038	2.52					14,734,341	2.49
Buckwheat No. 2 (rice)	3,583,783	1.85	157,306	1.85					6,769,047	1.84
Buckwheat No. 3 (barley)	1,310,332	1.38	90,423	1.38					4,431,445	1.31
Boiler	43,473	1.27							102,515	1.05
Other	513,678	2.99	7,337	.75	$67,823	$1.05	78,082	1.87	953,703	1.32
	183,357,027	6.83	1,263,233	3.98	67,823	1.05	574,233	5.49	310,579,724	6.47

[1] Value given is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.
[3] Includes $55,105, value of "range" coal.

TABLE 103.—*Average value per gross ton of anthracite shipped, local sales, colliery fuel, and total production, by regions, 1917–1925* [1]

Year and region	Shipments	Local sales	Colliery fuel	Total
1917				
Lehigh	$3.44	$2.20	$1.10	$3.18
Schuylkill	3.48	2.82	.72	3.08
Wyoming	3.48	3.03	.99	3.25
Sullivan County	2.95	3.44	1.03	2.85
	3.47	2.85	.90	3.10
1918				
Lehigh	4.01	2.68	1.36	3.71
Schuylkill	4.13	3.33	.91	3.67
Wyoming	4.18	3.39	1.45	3.92
Sullivan County	3.97	3.99	2.29	3.79
	4.14	3.25	1.23	3.81
1919				
Lehigh	4.86	3.37	1.80	4.51
Schuylkill	4.94	3.43	.85	4.31
Wyoming	5.21	4.55	1.55	4.85
Sullivan County	4.63	4.70	2.29	4.36
	5.08	3.98	1.32	4.64
1920				
Lehigh	5.88	3.29	1.94	5.34
Schuylkill	5.70	4.14	.90	4.99
Wyoming	6.15	5.17	1.80	5.71
Sullivan County	5.60	5.71	2.33	5.27
	5.97	4.44	1.47	5.43
1921				
Lehigh	6.13	3.50	1.59	5.54
Schuylkill	6.03	4.19	.65	5.22
Wyoming	6.29	5.64	1.27	5.82
Sullivan County	6.21	6.20	2.30	5.53
	6.20	4.75	1.08	5.60
1922				
Lehigh	$6.05	$3.97	$2.34	$5.56
Schuylkill	5.78	4.44	.78	4.98
Wyoming	6.52	5.78	1.69	6.02
Sullivan County	5.22	6.18	2.00	4.84
	6.21	5.07	1.38	5.61
1923				
Lehigh	6.36	3.80	1.77	5.84
Schuylkill	6.31	3.87	.72	5.63
Wyoming	6.81	5.92	1.43	6.40
Sullivan County	6.81	6.56	2.60	6.73
	6.60	4.80	1.21	6.08
1924				
Lehigh	6.54	4.53	1.68	6.03
Schuylkill	6.33	4.05	.45	5.57
Wyoming	6.81	6.14	.97	6.36
Sullivan County	5.11	7.15	1.98	5.10
	6.63	5.15	.87	6.08
1925				
Lehigh	6.24	4.49	1.57	5.79
Schuylkill	5.98	4.06	.42	5.22
Wyoming	6.78	6.01	1.12	6.37
Sullivan County	5.49	6.93	1.85	5.05
	6.47	5.06	.88	5.94

[1] Value given is value at which coal left possession of producing company f. o. b. mines and does not include margins of separately incorporated selling companies.

LABOR STATISTICS

TABLE 104.—*Men employed and days worked in the anthracite field, by regions, 1924–25*

Region	Average number employed					Average number of days worked
	Surface	Underground			Total	
		Miners [1]	All others	Total		
1924						
Lehigh:						
Breakers	6,297	7,913	6,077	13,990	20,287	273
Washeries	34				34	73
Dredges	10				10	127
	6,341	7,913	6,077	13,990	20,331	273
Schuylkill:						
Breakers	14,824	22,388	12,406	34,794	49,618	270
Washeries	535				535	141
Dredges	303				303	188
	15,662	22,388	12,406	34,794	50,456	268
Wyoming:						
Breakers	17,974	45,497	24,586	70,083	88,057	280
Washeries	445				445	166
Dredges	2				2	200
	18,421	45,497	24,586	70,083	88,504	280
Sullivan County: Breakers	222	237	259	496	718	200
Total breakers	[2] 39,317	76,035	43,328	119,363	158,680	275
Total washeries	1,014				1,014	141
Total dredges	315				315	186
Grand total	40,646	76,035	43,328	119,363	160,009	274
1925						
Lehigh:						
Breakers	5,838	8,372	5,360	13,732	19,570	188
Washeries	[3]				[3]	[3]
Dredges	9				9	145
	5,847	8,372	5,360	13,732	19,579	187
Schuylkill:						
Breakers	14,710	22,770	12,503	35,273	49,983	177
Washeries	420				420	124
Dredges	342				342	195
	15,472	22,770	12,503	35,273	50,745	177
Wyoming:						
Breakers	17,933	47,351	23,797	71,148	89,081	184
Washeries	311				311	133
Dredges	7				7	185
	18,251	47,351	23,797	71,148	89,399	184
Sullivan County: Breakers	174	280	135	415	589	97
Total breakers	[2] 38,655	78,773	41,795	120,568	159,223	182
Total washeries	731				731	128
Total dredges	358				358	193
Grand total	39,744	78,773	41,795	120,568	160,312	182

[1] Operators were requested to give number of "all miners (contract, consideration, and company) and their laborers."

[2] Includes a comparatively small number of washery employees who could not be separated from breaker employees.

[3] Included in breakers.

TABLE 105.—*Strikes, suspensions, and lockouts in the anthracite region, 1922–1925*

	Lehigh	Schuylkill	Wyoming	Sullivan County	Total
1922					
Total number employed	20,180	49,722	86,205	742	156,849
Men on strike	19,066	41,893	80,753	730	142,442
Man-days lost account strike	2,615,717	5,734,852	11,167,109	105,348	19,623,026
Average days lost:					
Per man employed	130	115	130	142	125
Per man on strike	137	137	138	144	138
1923					
Total number employed	20,639	49,350	86,978	776	157,743
Men on strike	18,593	43,524	72,772	696	135,585
Man-days lost account strike	354,830	805,640	1,456,364	12,584	2,629,418
Average days lost:					
Per man employed	17	16	17	16	17
Per man on strike	19	19	20	18	19
1924					
Total number employed	20,331	50,456	88,504	718	160,009
Men on strike	10,145	12,333	48,795	----------	71,273
Man-days lost account strike	151,243	86,429	905,958	----------	1,143,630
Average days lost:					
Per man employed	7	2	10	----------	7
Per man on strike	15	7	19	----------	16
1925					
Total number employed	19,579	50,745	89,399	589	160,312
Men on strike	18,751	45,715	82,876	586	147,928
Man-days lost account strike	1,863,605	4,675,143	8,661,264	69,494	15,269,506
Average days lost:					
Per man employed	95	92	97	118	95
Per man on strike	99	102	105	119	103

METHODS OF MINING

TABLE 106.—*Anthracite mined by machines, 1923–1925*

Region	1923		1924		1925	
	Number of machines	Gross tons	Number of machines	Gross tons	Number of machines	Gross tons
Schuylkill	----------	----------	----------	----------	1	19,063
Wyoming	147	962,058	193	1,200,103	139	764,204
Sullivan County	15	116,997	19	71,222	19	57,080
	162	1,079,055	212	1,271,325	159	840,347

TABLE 107.—*Anthracite recovered from steam-shovel strip pits, 1923–1925*

Region	1923		1924		1925	
	Number of shovels	Gross tons	Number of shovels	Gross tons	Number of shovels	Gross tons
Lehigh	38	1,066,517	37	963,885	52	831,181
Schuylkill	37	761,135	42	580,635	38	546,678
Wyoming	20	192,971	16	121,263	7	31,496
	95	2,020,623	95	1,665,783	97	1,409,355

TABLE 108.—*Anthracite produced by dredges, by rivers, 1924–25*

River (including tributaries)	Number of dredges	Gross tons	Value	River (including tributaries)	Number of dredges	Gross tons	Value
1924				1925			
Lehigh	3	71,697	$92,335	Lehigh	2	88,941	$86,983
Schuylkill	11	66,392	74,733	Schuylkill	13	155,035	190,362
Susquehanna	35	598,870	514,113	Susquehanna	38	662,906	651,947
	49	736,959	681,181		53	906,882	929,292

COAL PRODUCED FROM 1807 TO 1925

Coal was mined in the Richmond Basin before the Revolution, but the Bureau of Mines has been unable to discover any account of the quantities produced. The statistical record of the industry begins with the first shipments of Pennsylvania anthracite in 1807, and the amounts produced before that date must have been very small. The following table, compiled by L. Mann and E. W. Parker from all available sources, gives the production of anthracite and of bituminous coal for the period 1807 to 1820 and for each year thereafter. For the years before 1882 when the annual reports, "Mineral Resources of the United States," began, the main reliance of the compilers was the decennial census, supplemented by records from State and trade sources. In the absence of other information estimates were made for the intercensus years to round out the totals.

TABLE 109.—*Coal produced by States, 1807–1925, net tons*

Year	Pennsylvania	Virginia	Kentucky	Illinois	Ohio	Pennsylvania	Missouri
	Anthracite					*Bituminous*	
1807–1820	12,000						
1821	1,322						
1822	4,583	54,000					
1823	8,563	60,000					
1824	13,685	67,040					
1825	42,988	75,000					
1826	59,194	88,720					
1827	78,151	94,000					
1828	95,500	100,080	328				
1829	138,086	100,000	2,000				
1830	215,272	102,800	2,000				
1831	217,842	118,000	2,100				
1832	447,550	132,000	2,500				
1833	600,907	125,000	2,750	6,000			
1834	464,015	124,000	5,000	7,500			
1835	690,854	120,000	6,000	8,000			
1836	842,832	124,000	8,000	10,000			
1837	1,071,151	160,000	10,000	12,500			
1838	910,075	300,000	11,500	14,000	119,952		
1839	1,008,322	396,000	16,000	15,038	125,000		
1840	967,108	424,894	23,527	16,967	140,536	464,826	9,972
1841	1,182,441	379,600	35,000	35,000	160,000	475,000	12,000
1842	1,365,563	373,640	50,000	58,000	225,000	500,000	15,000
1843	1,556,753	370,000	60,000	75,000	280,000	650,000	25,000
1844	2,009,207	365,000	75,000	120,000	340,000	675,000	35,000
1845	2,480,032	350,000	100,000	150,000	390,000	700,000	50,000
1846	2,887,815	340,000	115,000	165,000	420,000	760,000	68,000
1847	3,551,005	325,000	120,000	180,000	480,000	399,840	80,000
1848	3,805,942	318,000	125,000	200,000	540,000	500,000	85,000
1849	3,995,334	315,000	140,000	260,000	600,000	750,000	90,000
1850	4,138,164	310,000	150,000	300,000	640,000	1,000,000	100,000
1851	5,481,065	310,000	160,000	320,000	670,000	1,200,000	125,000
1852	6,151,957	325,000	175,000	340,000	700,000	1,400,000	140,000
1853	6,400,426	350,000	180,000	375,000	760,000	1,500,000	160,000
1854	7,394,875	370,000	190,000	385,000	800,000	1,650,000	175,000

TABLE 109.—*Coal produced by States, 1807–1925, net tons*—Continued

Year	Pennsylvania	Virginia	Kentucky	Illinois	Ohio	Pennsylvania	Missouri
	Anthracite					*Bituminous*	
1855	8,141,754	380,782	200,000	400,000	890,000	1,780,000	185,000
1856	8,534,779	352,687	215,000	410,000	930,000	1,850,000	200,000
1857	8,186,567	363,605	240,000	450,000	975,000	2,000,000	220,000
1858	8,426,102	377,690	250,000	490,000	1,000,000	2,200,000	240,000
1859	9,619,771	359,055	275,000	530,000	1,060,000	2,400,000	260,000
1860	8,115,842	473,360	285,760	728,400	1,265,600	2,690,786	280,000
1861	9,799,654	445,165	280,000	670,000	1,150,000	3,200,000	300,000
1862	9,695,110	445,124	275,000	780,000	1,200,000	4,000,000	320,000
1863	11,785,320	40,000	250,000	890,000	1,204,581	5,000,000	360,000
1864	12,538,649	40,000	250,000	1,000,000	1,815,622	5,839,000	375,000
1865	11,891,746	40,000	200,000	1,260,000	1,536,218	6,350,000	420,000
1866	15,651,183	40,000	180,000	1,580,000	1,887,424	6,800,000	450,000
1867	16,002,109	50,000	175,000	1,800,000	2,692,334	7,300,000	500,000
1868	17,003,405	59,051	160,000	2,000,000	2,475,844	7,500,000	541,000
1869	17,083,134	65,000	160,000	1,854,000	2,461,986	6,750,000	550,000
1870	15,664,275	61,803	150,582	2,624,163	2,527,285	7,798,518	621,930
1871	19,342,057	70,000	250,000	3,000,000	4,000,000	9,040,565	725,000
1872	24,233,166	69,440	380,800	3,360,000	5,315,294	11,695,040	784,000
1873	26,152,837	67,200	400,000	3,920,000	4,550,028	13,098,829	784,000
1874	24,818,790	70,000	360,000	4,203,000	3,267,585	12,320,000	789,680
1875	22,485,766	60,000	500,000	4,453,178	4,864,259	11,760,000	840,000
1876	22,793,245	55,000	650,000	5,000,000	3,500,000	12,880,000	1,008,000
1877	25,660,316	50,000	850,000	5,350,000	5,250,000	14,000,000	1,008,000
1878	21,689,682	50,000	900,000	5,700,000	5,500,000	15,120,000	1,008,000
1879	30,207,793	45,000	1,000,000	5,000,000	6,000,000	16,240,000	1,008,000
1880	28,649,812	43,079	946,288	6,115,377	6,008,595	18,425,163	844,304
1881	31,920,018	50,000	1,232,000	6,720,000	9,240,000	22,400,000	1,960,000
1882	35,121,256	112,000	1,300,000	9,115,653	9,450,000	24,640,000	2,240,000
1883	38,456,845	252,000	1,650,000	12,123,456	8,229,429	26,880,000	2,520,000
1884	37,156,847	336,000	1,550,000	12,208,075	7,640,062	28,000,000	2,800,000
1885	38,335,974	567,000	1,600,000	11,834,459	7,816,179	26,000,000	3,080,000
1886	39,035,446	684,951	1,550,000	11,175,241	8,435,211	27,094,501	1,800,000
1887	42,088,197	825,263	1,933,185	12,423,066	10,300,708	31,516,856	3,209,916
1888	46,619,564	1,073,000	2,570,000	14,328,181	10,910,951	33,796,727	3,909,967
1889	45,546,970	865,786	2,399,755	12,104,272	9,976,787	36,174,089	2,557,823
1890	46,468,641	784,011	2,701,496	15,292,420	11,494,506	42,302,173	2,735,221
1891	50,665,431	736,399	2,916,069	15,660,698	12,868,683	42,788,490	2,674,606
1892	52,472,504	675,205	3,025,303	17,862,276	13,562,927	46,694,576	2,733,949
1893	53,967,543	820,339	3,007,179	19,949,564	13,253,646	44,070,724	2,897,442
1894	51,921,121	1,229,083	3,111,192	17,113,576	11,909,856	39,912,463	2,245,039
1895	57,999,337	1,368,324	3,357,770	17,735,864	13,355,806	50,217,228	2,372,393
1896	54,346,081	1,254,723	3,333,478	19,786,626	12,875,202	49,557,453	2,331,542
1897	52,611,680	1,528,302	3,602,097	20,072,758	12,196,942	54,417,974	2,665,626
1898	53,382,644	1,815,274	3,887,908	18,599,299	14,516,867	65,165,133	2,688,321
1899	60,418,005	2,105,791	4,607,255	24,439,019	16,500,270	74,150,175	3,025,814
1900	57,367,915	2,393,754	5,328,964	25,767,981	18,988,150	79,842,326	3,540,103
1901	67,471,667	2,725,873	5,469,986	27,331,552	20,943,807	82,305,946	3,802,088
1902	41,373,595	3,182,993	6,766,984	32,939,373	23,519,894	98,574,367	3,890,154
1903	74,607,068	3,451,307	7,538,032	36,957,104	24,838,103	103,117,178	4,238,586
1904	73,156,709	3,410,914	7,576,482	36,475,060	24,400,220	97,938,287	4,168,308
1905	77,659,850	4,275,271	8,432,523	38,434,363	25,552,950	118,413,637	3,983,378
1906	71,282,411	4,254,879	9,653,647	41,480,104	27,731,640	129,293,206	3,758,008
1907	85,604,312	4,710,895	10,753,124	51,317,146	32,142,419	150,143,177	3,997,936
1908	83,268,754	4,259,042	10,246,553	47,659,690	26,270,639	117,179,527	3,317,315
1909	81,070,359	4,752,217	10,697,384	50,904,990	27,939,641	137,966,791	3,756,530
1910	84,485,236	6,507,997	14,623,319	45,900,246	34,209,668	150,521,526	2,982,433
1911	90,464,067	6,864,667	14,049,703	53,679,118	30,759,986	144,561,257	3,836,107
1912	84,361,598	7,846,638	16,490,521	59,885,226	34,528,727	161,865,488	4,339,856
1913	91,524,922	8,828,068	19,616,600	61,618,744	36,200,527	173,781,217	4,318,125
1914	90,821,507	7,959,535	20,382,763	57,589,197	18,843,115	147,983,294	3,935,980
1915	88,995,061	8,122,596	21,361,674	58,829,576	22,434,691	157,955,137	3,811,593
1916	87,578,493	9,707,474	25,393,997	66,195,336	34,728,219	170,295,424	4,742,146
1917	99,611,811	10,087,091	27,807,971	86,199,387	40,748,734	172,448,142	5,670,549
1918	98,826,084	10,289,808	31,612,617	89,291,105	45,812,943	178,550,741	5,667,730
1919	88,092,201	9,326,830	30,036,061	60,862,608	35,876,682	150,758,154	3,979,798
1920	89,598,249	11,378,606	35,690,762	88,724,893	45,878,191	170,607,847	5,369,565
1921	90,473,451	7,492,378	31,588,270	69,602,763	31,942,776	116,013,942	3,551,621
1922	54,683,022	10,491,174	42,134,175	58,467,736	26,953,791	113,148,308	2,924,750
1923	93,339,009	11,761,643	44,777,317	79,310,075	40,546,443	171,879,913	3,403,151
1924	87,926,862	10,693,464	45,147,204	68,323,281	30,473,007	130,633,773	2,480,880
1925	61,817,149	12,799,443	55,068,670	66,909,359	28,034,112	136,928,019	2,694,215
	3,478,458,909	216,397,823	619,130,125	1,815,821,639	1,084,951,250	4,549,147,753	168,400,450

TABLE 109.—*Coal produced by States, 1807–1925, net tons*—Continued

Year	Indiana	Alabama	Tennessee	Iowa	Arkansas	North Carolina	Maryland	Washington	Michigan
1807–1820							3,000		
1832							12,000		
1840	9,682	946	558	400	220	3	8,880		
1841	10,000	1,000	600	500					
1842	18,000	1,000	1,000	750			2,104		
1843	25,000	1,200	4,500	1,000			12,421		
1844	30,000	1,200	10,000	2,500			18,345		
1845	35,000	1,500	18,000	5,000			30,372		
1846	40,000	1,500	25,000	6,500			36,707		
1847	45,000	2,000	30,000	8,000			65,222		
1848	50,000	2,000	40,000	10,000			98,032		
1849	56,000	2,500	52,000	12,500			175,497		
1850	60,000	2,500	60,000	15,000			242,517		
1851	60,000	3,000	70,000	18,000			317,460		
1852	75,000	3,000	75,000	20,000			411,707		
1853	75,000	4,000	85,000	23,000			657,862		
1854	80,000	4,500	90,000	25,000			812,727		
1855	80,000	6,000	100,000	28,000			735,137		
1856	85,000	6,800	115,000	30,000			817,659		
1857	85,000	8,000	125,000	33,000			654,017		
1858	87,000	8,500	135,000	37,500			722,686		
1859	95,000	9,000	150,000	42,000			833,349		
1860	101,280	10,200	165,300	41,920	200		438,000	5,374	2,320
1861	128,000	10,000	150,000	50,000			287,073	6,000	3,000
1862	150,000	12,500	140,000	53,000		30,000	346,201	7,000	5,000
1863	200,000	15,000	100,000	57,000		30,000	877,313	8,000	8,000
1864	250,000	15,000	100,000	63,000		25,000	755,764	10,000	12,000
1865	280,000	12,000	100,000	69,574		20,000	1,025,208	12,000	15,000
1866	320,000	12,000	100,000	99,320		20,000	1,217,668	13,000	20,000
1867	350,000	10,000	110,000	150,000		20,000	1,381,429	14,500	25,000
1868	375,000	10,000	125,000	241,453		18,000	1,529,879	15,000	28,000
1869	400,000	10,000	130,000	295,105		16,000	2,216,300	16,200	29,980
1870	437,870	11,000	133,418	263,487		15,000	1,819,824	17,844	28,150
1871	600,000	15,000	180,000	300,000		15,000	2,670,338	20,000	32,000
1872	896,000	16,800	224,000	336,000		12,000	2,647,156	23,000	33,600
1873	1,000,000	44,800	350,000	392,000		10,000	3,198,911	26,000	56,000
1874	812,000	50,400	350,000	799,936			2,899,392	30,352	58,000
1875	800,000	67,200	360,000	1,231,547			2,808,018	99,568	62,500
1876	950,000	112,000	550,000	1,250,000			2,126,873	110,342	66,000
1877	1,000,000	196,000	450,000	1,300,000			1,939,575	120,896	69,197
1878	1,000,000	224,000	375,000	1,350,000			2,068,925	131,660	85,322
1879	1,196,490	280,000	450,000	1,400,000			2,132,233	142,666	82,015
1880	1,454,327	323,972	495,131	1,461,116	14,778	350	2,228,917	145,015	100,800
1881	1,984,120	420,000	840,000	1,960,000	20,000	300	2,533,348	196,000	112,000
1882	1,976,470	896,000	850,000	3,920,000	25,000	400	1,555,445	177,340	135,339
1883	2,560,000	1,568,000	1,000,000	4,457,540	50,000	400	2,476,075	244,990	71,296
1884	2,260,000	2,240,000	1,200,000	4,370,566	75,000	500	2,765,617	166,936	36,712
1885	2,375,000	2,492,000	1,440,957	4,012,575	100,000	500	2,833,337	380,250	45,178
1886	3,000,000	1,800,000	1,714,290	4,315,779	125,000	400	2,517,577	423,525	60,434
1887	3,217,711	1,950,000	1,900,000	4,473,828	129,600	300	3,278,023	772,601	71,461
1888	3,140,979	2,900,000	1,967,297	4,952,440	276,871	250	3,479,470	1,215,750	81,407
1889	2,845,057	3,572,983	1,925,689	4,095,358	279,584	222	2,939,715	1,030,578	67,431
1890	3,305,737	4,090,409	2,169,585	4,021,739	399,888	10,262	3,357,813	1,263,689	74,977
1891	2,973,474	4,759,781	2,413,678	3,825,495	542,379	20,355	3,820,239	1,056,249	80,307
1892	3,345,174	5,529,312	2,092,064	3,918,491	535,558	6,679	3,419,962	1,213,427	77,990
1893	3,791,851	5,136,935	1,902,258	3,972,229	574,763	17,000	3,716,041	1,264,877	45,979
1894	3,423,921	4,397,178	2,180,879	3,967,253	512,626	16,900	3,501,428	1,106,470	70,022
1895	3,995,892	5,693,775	2,535,644	4,156,074	598,322	24,900	3,915,585	1,191,410	112,322
1896	3,905,779	5,748,697	2,663,106	3,954,028	675,374	7,813	4,143,936	1,195,504	92,882
1897	4,151,169	5,893,770	2,888,849	4,611,865	856,190	21,280	4,442,128	1,434,112	223,592
1898	4,920,743	6,535,283	3,022,896	4,618,842	1,205,479	11,495	4,674,884	1,884,571	315,722
1899	6,006,523	7,593,416	3,330,659	5,177,479	843,554	26,896	4,807,396	2,029,881	624,708
1900	6,484,086	8,394,275	3,509,562	5,202,939	1,447,945	17,734	4,024,688	2,474,093	849,475
1901	6,918,225	9,099,052	3,633,290	5,617,499	1,816,136	12,000	5,113,127	2,578,217	1,241,241
1902	9,446,424	10,354,570	4,332,968	5,904,766	1,943,932	23,000	5,271,609	2,681,214	964,718
1903	10,794,692	11,654,324	4,798,004	6,419,811	2,229,172	17,309	4,846,165	3,193,273	1,367,619
1904	10,842,189	11,262,046	4,782,211	6,519,933	2,009,451	7,000	4,813,622	3,137,681	1,342,840

TABLE 109.—*Coal produced by States, 1807–1925, net tons*—Continued

Year	Indiana	Alabama	Tennessee	Iowa	Arkansas	North Carolina	Maryland	Washington	Michigan
1905	11, 895, 252	11, 866, 069	5, 766, 690	6, 798, 609	1, 934, 673	1. 557	5, 108, 539	2, 864, 926	1, 473, 211
1906	12, 092, 560	13, 107, 963	6, 259, 275	7, 266, 224	1, 864, 268	-------	5, 435, 453	3, 276, 184	1, 346, 338
1907	13, 985, 713	14, 250, 454	6, 810, 243	7, 574, 322	2, 670, 438	-------	5, 532, 628	3, 680, 532	2, 035, 858
1908	12, 314, 890	11, 604, 593	6, 199, 171	7, 161, 310	2, 078, 357	-------	4, 377, 093	3, 024, 943	1, 835, 019
1909	14, 834, 259	13, 703, 450	6, 358, 645	7, 757, 762	2, 377, 157	-------	4, 023, 241	3, 602, 263	1, 784, 692
1910	18, 389, 815	16, 111, 462	7, 121, 380	7, 928, 120	1, 905, 958	-------	5, 217, 125	3, 911, 899	1, 534, 967
1911	14, 201, 355	15, 021, 421	6, 433, 156	7, 331, 648	2, 106, 789	120	4, 685, 795	3, 572, 815	1, 476, 074
1912	15, 285, 718	16, 100, 600	6, 473, 228	7, 289, 529	2, 100, 819	200	4, 964, 038	3. 360, 932	1, 206, 230
1913	17, 165, 671	17, 678, 522	6, 860, 184	7, 525, 936	2, 234, 107	-------	4, 779, 839	3, 877, 891	1, 231, 786
1914	16, 641, 132	15, 593, 422	5, 943, 258	7, 451, 022	1, 836, 540	-------	4, 133, 547	3, 064, 820	1, 283, 030
1915	17. 006, 152	14, 927, 937	5, 730, 361	7, 614, 143	1, 652, 106	-------	4, 180, 477	2, 429, 095	1, 156, 138
1916	20, 093, 528	18, 086, 197	6, 137, 449	7, 260, 800	1, 994, 915	-------	4, 460, 046	3, 038, 588	1, 180, 360
1917	26. 539, 329	20, 068, 074	6, 194, 221	8, 965, 830	2, 143, 579	-------	4, 745, 924	4 009, 902	1, 374, 805
1918	30, 678, 634	19, 184, 962	6, 831, 048	8, 192, 195	2, 227, 369	1, 420	4, 497, 297	4, 082. 212	1, 464, 818
1919	20, 912, 288	15, 536, 721	5, 213, 205	5, 624, 692	1, 429, 020	6, 989	3, 021, 686	2, 990, 447	996, 545
1920	29, 350, 585	16, 294, 099	6, 662, 428	7, 813, 916	2, 103. 596	11, 540	4, 065, 239	3. 757. 093	1, 489, 765
1921	20, 319, 509	12, 568, 899	4, 460, 326	4. 531, 392	1, 227, 777	23, 438	1, 827, 740	2, 428, 722	1, 141, 715
1922	19, 132, 839	18, 324, 740	4, 876, 774	4, 335, 161	1, 110, 046	78, 570	1, 222, 707	2, 581, 165	929, 390
1923	26, 229, 099	20, 457, 649	6, 040, 268	5, 710, 735	1, 296, 892	36, 019	2, 285, 926	2, 926, 392	1, 172, 075
1924	21, 480, 213	19, 130, 184	4, 556, 555	5, 468. 450	1, 451, 503	57, 094	2, 133, 703	2, 653. 667	831, 020
1925	21. 224, 966	20, 004, 395	5, 454, 011	4, 714, 843	1, 220. 039	65, 153	2, 694, 572	2. 537. 890	808, 233
	521, 240, 422	465. 131, 637	191, 850, 269	264, 286, 276	56, 252, 970	757. 348	214, 922, 543	100,959,433	36, 739, 605

Year	Georgia	California	West Virginia	Colorado	Wyoming	Kansas	Utah	Oklahoma (Indian Territory)
1860	1, 900	-------	-------	-------	-------	-------	-------	-------
1861	2, 500	6, 620	-------	-------	-------	-------	-------	-------
1862	3, 500	23, 400	-------	-------	-------	-------	-------	-------
1863	6, 000	43, 200	444, 648	-------	-------	-------	-------	-------
1864	10, 000	50, 700	454, 888	500	-------	-------	-------	-------
1865	10, 000	60, 530	487, 897	1, 200	800	-------	-------	-------
1866	8, 000	84, 020	512, 068	6, 400	2, 500	-------	-------	-------
1867	8, 000	124, 690	589, 360	17, 000	5, 000	-------	-------	-------
1868	10, 000	143, 676	609, 227	10, 500	6, 925	-------	-------	-------
1869	12, 000	157, 234	603, 148	8, 000	49, 382	36, 891	-------	-------
1870	15, 000	141, 890	608, 878	4, 500	50, 000	32, 938	5, 800	-------
1871	20, 000	152, 493	618, 830	15, 600	147, 328	41, 000	-------	-------
1872	25, 000	190, 859	700, 000	68, 540	221, 745	44, 800	-------	-------
1873	40, 000	186, 611	1, 000, 000	69, 997	259, 700	56, 000	-------	-------
1874	60, 000	215, 352	1, 120, 000	77, 372	219, 061	85, 000	-------	-------
1875	80, 000	166, 638	1, 120, 000	98, 838	300, 808	150, 000	-------	-------
1876	110, 000	128, 049	896, 000	117, 666	334, 550	225, 000	50, 400	-------
1877	120, 000	107, 789	1, 120, 000	160, 000	342, 853	300, 000	50, 400	-------
1878	128, 000	134, 237	1, 120, 000	200, 630	333, 200	375, 000	67, 200	-------
1879	140, 000	147, 879	1, 400, 000	322, 732	400, 991	460, 000	50, 000	-------
1880	154, 644	236, 950	1, 829, 844	462, 747	589, 595	771, 442	14, 748	120, 947
1881	168, 000	140, 000	1, 680, 000	706, 744	420, 000	840, 000	52, 000	150, 000
1882	160. 000	112, 592	2, 240, 000	1, 061, 479	707, 764	750, 000	100, 000	200, 000
1883	155, 000	76, 162	2, 335, 833	1, 229, 593	779, 689	900, 000	200, 000	350, 000
1884	150, 000	77, 485	3, 360, 000	1, 130, 024	902, 620	1, 100, 000	200, 000	425, 000
1885	150, 000	71, 615	3, 369, 062	1, 356, 062	807, 328	1, 212, 057	213, 120	500, 000
1886	223, 000	100, 000	4, 005, 796	1, 368, 338	829, 355	1, 400, 000	200, 000	534, 580
1887	313, 715	50, 000	4, 881, 620	1, 791, 735	1, 170, 318	1, 596, 879	180, 021	685, 911
1888	180, 000	95, 000	5, 498, 800	2, 185, 477	1, 481, 540	1, 850, 000	258, 961	761, 986
1889	225, 934	119, 820	6, 231, 880	2, 597, 181	1, 388, 947	2, 221, 043	236, 651	752, 832
1890	228, 337	110, 711	7, 394, 654	3, 077, 003	1, 870, 366	2, 259, 922	318, 159	869, 229
1891	171, 000	93, 301	9, 220, 665	3, 512, 632	2, 327, 841	2, 716, 705	371, 045	1, 091, 032
1892	215, 498	85, 178	9, 738, 755	3, 510, 830	2, 503, 839	3, 007, 276	361, 013	1, 192, 721
1893	372, 740	72, 603	10, 708, 578	4, 102, 389	2, 439, 311	2, 652, 546	413, 205	1, 252, 110
1894	354, 111	67, 247	11, 627, 757	2, 831, 409	2, 417, 463	3, 388, 251	431, 550	969, 606
1895	260, 998	75, 453	11, 387, 961	3, 082, 982	2, 246, 911	2, 926, 870	471, 836	1, 211, 185
1896	238, 546	78, 544	12, 876, 296	3, 112, 400	2, 229, 624	2, 884, 801	418, 627	1, 366, 646
1897	195, 869	87, 992	14, 248, 159	3, 361, 703	2, 597, 886	3, 054, 012	521, 560	1, 336, 380
1898	244, 187	145, 888	16, 700, 999	4, 076, 347	2, 863, 812	3, 406, 555	593, 709	1, 381, 466
1899	233, 111	160, 915	19, 252, 995	4, 776, 224	3, 837, 392	3, 852, 267	786, 049	1, 537, 427
1900	315, 557	171, 708	22, 647, 207	5, 244, 364	4, 014, 602	4, 467, 870	1, 147, 027	1, 922, 298
1901	342, 825	151, 079	24, 068, 402	5, 700, 015	4, 485, 374	4, 900, 528	1, 322, 614	2, 421, 781
1902	414, 083	84, 984	24, 570, 826	7, 401, 343	4, 429, 491	5, 266, 065	1, 574, 521	2, 820, 666
1903	416, 951	104, 673	29, 337, 241	7, 423, 602	4, 635, 293	5, 839, 976	1, 681, 409	3, 517, 388
1904	383, 191	78, 888	32, 406, 752	6, 658, 355	5, 178, 556	6, 333, 307	1, 493, 027	3, 046, 539

TABLE 109.—*Coal produced by States, 1807–1925, net tons*—Continued

Year	Georgia	California	West Virginia	Colorado	Wyoming	Kansas	Utah	Oklahoma (Indian Territory)
1905	351,991	77,050	37,791,580	8,826,429	5,602,021	6,423,979	1,332,372	2,924,427
1906	332,107	25,290	43,290,350	10,111,218	6,133,994	6,024,775	1,772,551	2,860,200
1907	362,401	13,950	48,091,583	10,790,236	6,252,990	7,322,449	1,947,607	3,642,658
1908	264,822	18,755	41,897,843	9,634,973	5,489,902	6,245,508	1,846,792	2,948,116
1909	211,196	45,836	51,849,220	10,716,936	6,393,109	6,986,478	2,266,899	3,119,377
1910	177,245	11,164	61,671,019	11,973,736	7,533,088	4,921,451	2,517,809	2,646,226
1911	165,210	10,747	59,831,580	10,157,383	6,744,864	6,178,728	2,513,175	3,074,242
1912	227,503	10,978	66,786,687	10,977,824	7,368,124	6,986,182	3,016,149	3,675,418
1913	255,626	24,839	71,254,136	9,232,510	7,393,066	7,202,210	3,254,828	4,165,770
1914	166,498	(1)	71,707,626	8,170,559	6,475,293	6,860,988	3,103,036	3,988,613
1915	134,496	(1)	77,184,069	8,624,980	6,554,028	6,824,474	3,108,715	3,693,580
1916	173,554	(1)	86,460,127	10,484,237	7,910,647	6,881,455	3,567,428	3,608,011
1917	119,028	(1)	86,441,667	12,483,336	8,575,619	7,184,975	4,125,230	4,386,844
1918	66,716	(1)	89,935,839	12,407,571	9,438,688	7,561,947	5,136,825	4,813,447
1919	53,337	(1)	79,036,553	10,323,420	7,219,738	5,224,724	4,631,323	3,802,113
1920	50,156	(1)	89,970,707	12,278,225	9,630,271	5,926,408	6,005,199	4,849,288
1921	33,815	(1)	72,786,996	9,122,760	7,200,666	[2]3,466,641	4,078,784	3,362,623
1922	60,636	(1)	80,488,192	10,019,597	5,971,724	[2]2,955,170	4,992,008	2,802,511
1923	75,620	(1)	107,899,941	10,346,218	7,575,031	4,443,149	4,720,217	2,885,038
1924	74,947	(1)	101,662,897	10,444,098	6,757,468	4,247,733	4,488,157	2,329,615
1925	66,174	(1)	122,380,959	10,310,551	6,553,232	4,524,251	4,690,342	2,325,840
	10,500,275	[3]5,153,264	1,853,444,597	300,377,250	208,603,323	195,798,676	86,900,098	102,321,687

Year	Oregon	Montana	New Mexico	Texas	North Dakota	Miscellaneous [4]	Total bituminous	Grand total
1807–1820							3,000	15,000
1821								1,322
1822							54,000	58,583
1823							60,000	68,563
1824							67,040	80,725
1825							75,000	117,988
1826							88,720	147,914
1827							94,000	172,151
1828							100,408	195,908
1829							102,000	240,086
1830							104,800	320,072
1831							120,100	337,942
1832							146,500	594,050
1833							133,750	734,657
1834							136,500	600,515
1835							134,000	824,854
1836							142,000	984,832
1837							182,500	1,253,651
1838							445,452	1,355,527
1839							552,038	1,560,360
1840						1,520	1,102,931	2,070,039
1841							1,108,700	2,291,141
1842							1,244,494	2,610,057
1843							1,504,121	3,060,874
1844							1,672,045	3,681,252
1845							1,829,872	4,309,904
1846							1,977,707	4,865,522
1847							1,735,062	5,286,067
1848							1,968,032	5,773,974
1849							2,453,497	6,448,831
1850							2,880,017	7,018,181
1851							3,253,460	8,734,525
1852							3,664,707	9,816,664
1853							4,169,862	10,570,288
1854							4,582,227	11,977,102
1855							4,784,919	12,926,673
1856							5,012,146	13,546,925
1857							5,153,622	13,340,189
1858							5,548,376	13,974,478
1859							6,013,404	15,633,175

[1] Included under "Miscellaneous."

[2] Figures for 1921 and 1922 are incomplete. State Coal Mine Inspection Department reports 4,028,624 tons in 1921 and 3,518,243 tons in 1922.

[3] Total through 1913.

[4] From 1871 to 1888, inclusive, production reported in this column is due principally to colliery consumption, which in some years was estimated and not included in the distribution by States. Since 1888 small, irregular production from several unimportant sources has been included in this column.

TABLE 109.—*Coal produced by States, 1807–1925, net tons*—Continued

Year	Oregon	Montana	New Mexico	Texas	North Dakota	Miscellaneous	Total bituminous	Grand total
1860						3,800	6,494,200	14,610,042
1861							6,688,358	16,488,012
1862							7,790,725	17,485,835
1863							9,533,742	21,319,062
1864							11,066,474	23,605,123
1865							11,900,427	23,792,173
1866							13,352,400	29,003,583
1867							14,722,313	30,724,422
1868							15,858,555	32,861,960
1869							15,821,226	32,904,360
1870						1,425	17,371,305	33,035,580
1871						5,629,869	27,543,023	46,885,080
1872						176,159	27,220,233	51,453,399
1873						1,939,567	31,449,643	57,602,480
1874							27,787,130	52,605,920
1875						40,000	29,862,554	52,348,320
1876						366,875	30,486,755	53,280,000
1877						1,056,734	34,841,444	60,501,760
1878						374,744	36,245,918	57,935,600
1879							37,898,006	68,105,799
1880	43,205	224				200	42,831,758	71,481,570
1881	33,600	5,000	21,000			76,900	53,961,012	85,881,030
1882	35,000	10,000	157,092			6,502,359	68,429,933	103,551,189
1883	40,000	19,795	211,347			6,870,075	77,250,680	115,707,525
1884	45,000	80,376	220,557	125,000	35,000	9,498,174	82,998,704	120,155,551
1885	50,000	86,440	306,202	100,000	25,000		72,824,321	111,160,295
1886	45,000	49,846	271,285	100,000	25,955	794,917	74,644,981	113,680,427
1887	37,696	10,202	508,034	75,000	21,470	1,237,195	88,562,314	130,650,511
1888	75,000	41,467	626,665	90,000	34,000	4,257,907	102,040,093	148,659,657
1889	64,359	363,301	486,943	128,216	28,907	1,400	95,682,543	141,229,513
1890	61,514	517,477	375,777	184,440	30,000	807	111,302,322	157,770,963
1891	51,826	541,861	462,328	172,100	30,000	2,000	117,901,238	168,566,669
1892	34,661	564,648	661,330	245,690	40,725	1,510	126,856,567	179,329,071
1893	41,683	892,309	665,094	302,206	49,630		128,385,231	182,352,774
1894	47,521	927,395	597,196	420,848	42,015	150	118,820,405	170,741,526
1895	73,685	1,504,193	720,654	484,959	38,997	200	135,118,193	193,117,530
1896	101,721	1,543,445	622,626	544,015	78,050	18,792	137,640,276	191,986,357
1897	107,289	1,647,882	716,981	639,341	77,246	18,565	147,617,519	200,229,199
1898	58,184	1,479,803	992,288	686,734	83,895	17,039	166,593,623	219,976,267
1899	86,888	1,496,451	1,050,714	883,832	98,809	1,277	193,323,187	253,741,192
1900	58,864	1,661,775	1,299,299	968,373	129,883	1,210	212,316,112	269,684,027
1901	69,011	1,396,081	1,086,546	1,107,953	166,601	1,300	225,828,149	293,299,816
1902	65,648	1,560,823	1,048,763	901,912	226,511	4,242	260,216,844	301,590,439
1903	91,144	1,488,810	1,541,781	926,759	278,645	4,997	282,749,348	357,356,416
1904	111,540	1,358,919	1,452,325	1,195,944	271,928	4,174	278,659,689	351,816,398
1905	109,641	1,643,832	1,649,933	1,200,684	317,542	9,656	315,062,785	392,722,635
1906	79,731	1,829,921	1,964,713	1,312,873	305,689	11,706	342,874,867	414,157,278
1907	70,981	2,016,857	2,628,959	1,648,069	347,760	17,727	394,759,112	480,363,424
1908	86,259	1,920,190	2,467,937	1,895,377	320,742	8,586	332,573,944	415,842,698
1909	87,276	2,553,940	2,801,128	1,824,440	422,047	7,353	379,744,257	460,814,616
1910	67,533	2,920,970	3,508,321	1,892,176	399,041	5,448	417,111,142	501,596,378
1911	46,661	2,976,358	3,148,158	1,974,593	502,628	2,721	405,907,059	496,371,126
1912	41,637	3,048,495	3,536,824	2,188,612	499,480	3,319	450,104,982	534,466,580
1913	46,063	3,240,973	3,708,806	2,429,144	495,320	14,789	478,435,297	569,960,219
1914	51,558	2,805,173	3,877,689	2,323,773	506,685	25,824	422,703,970	513,525,477
1915	39,231	2,789,755	3,817,940	2,088,908	528,078	24,496	442,624,426	531,619,487
1916	42,592	3,632,527	3,793,011	1,987,503	634,912	29,199	502,519,682	590,098,175
1917	28,327	4,226,689	4,000,527	2,355,815	790,548	68,420	551,790,563	651,402,374
1918	13,328	4,532,505	4,023,239	2,261,135	719,733	89,948	579,385,820	678,211,904
1919	18,739	3,236,369	3,138,756	1,680,656	840,959	81,645	465,860,058	553,952,259
1920	20,717	4,413,866	3,683,440	1,615,015	948,625	76,641	568,666,683	658,264,932
1921	[1]	2,733,958	2,453,482	972,839	864,903	123,215	415,921,950	506,395,401
1922	[1]	2,572,221	3,147,173	1,106,007	1,327,564	113,920	422,268,099	476,951,121
1923	[1]	3,147,678	2,915,173	1,187,329	1,385,400	150,271	564,564,662	657,903,671
1924	[1]	2,905,365	2,786,063	1,147,011	1,200,527	128,659	483,686,538	571,613,400
1925	[1]	3,043,686	2,556,851	1,008,375	1,324,620	109,940	520,052,741	581,869,890
	[2]2,380,313	81,439,851	81,710,950	46,383,656	16,496,070	40,009,566	13,337,509,119	16,815,968,028

[1] Included under "Miscellaneous."

[2] Total through 1920.

COKE AND BY-PRODUCTS

By F. G. Tryon and H. L. Bennit

INTRODUCTION

ACKNOWLEDGMENTS

This report is made possible by the voluntary cooperation of the producers of coke, who have courteously supplied the statistical information on which it is based. Special acknowledgment is made of the assistance rendered by operators of by-product ovens in supplying monthly reports of coke output, and by the railroads in reporting weekly the number of cars of beehive coke loaded for shipment. The statistics of exports and imports were compiled from the records of the Bureau of Foreign and Domestic Commerce, by J. A. Dorsey. The figures of world production were assembled by L. M. Jones. All the other tables have been prepared by the junior author under the direction of the senior author.

DEFINITIONS OF TERMS USED IN STATISTICAL TABLES

The standard unit of measurement in the coke industry in the United States is the short or net ton of 2,000 pounds; unless other notation is made, it is the unit employed throughout this chapter.

The term "coke," as used, does not include breeze or the fine coke screenings, because operators in general, especially those in the beehive industry, do not regard this fine material as properly so classified. No effort has been made to define accurately the limitation as to size between coke and breeze. Each operator has followed his own regular practice in reporting his output of fine material to the Bureau of Mines. It is probably safe to say, however, that coke breeze and screenings correspond closely in size to the anthracite usually classified as steam sizes; in other words, they include the material smaller than pea coal.

For reasons explained in a later section, the statistics of by-product coke in this report cover the operations of all by-product coke ovens, including those installed and operated by public utilities engaged primarily in manufacturing gas for city supply.

ACCOUNTING PRACTICES OF COKE OPERATORS THAT AFFECT STATISTICS

The term "value," as applied to coke in this report, means the value at the ovens. For that part of the output that is sold the value is obviously the amount received for the coke f. o. b. ovens; but a considerable proportion of the coke produced in the United States is made in ovens operated by large corporations that not only mine the coal and make the coke but also have blast furnaces and steel mills that consume the entire product of the ovens. Under such condi-

tions the fixing of a value upon the coke and upon the coal consumed in making it is purely arbitrary. Some corporations charge the coke to the furnace department at cost; others add a percentage of profit or base the reported value on what the coke would cost if purchased.

In the statistics published in this series of reports the value assigned to that part of the output produced but not sold has not always been determined in the same way; therefore the figures of total value of all coke produced are not strictly comparable from year to year. Before 1918 each operator was asked to place his own value on his entire production, including coke used at the plant but not sold. In 1918 and again in 1920 the value of this part of the product was estimated by assigning to the coke produced but not sold in each State a value per ton equal to the average receipts for the coke sold in the same State. In 1919, again in 1921, and in subsequent years the operator was asked to place his own value on the coke used but not sold. These changes in the form of inquiry must be borne in mind in considering Tables 2, 4, 38, 39, and 44 to 47.

These differences in accounting practice also affect the relative proportions of the output reported as "sold" and as "used by producer." Between the blast furnaces, which are the largest users of coke, and the coke plants there exists a close business relation, which at many plants amounts to identity of ownership. Among such affiliated interests the line between sales and interdepartmental transfers is difficult to draw, and a large part of the furnace coke reported as sold actually goes to iron furnaces that are in some way connected with the coke companies. (See Tables 38 and 39.)

COKE-PRODUCING INDUSTRIES

Coke is produced in the United States by a group of four industries, which are related in the sense that the product is to some extent interchangeable, but are sharply differentiated as to location, method, equipment, and organization. Besides that produced in the familiar beehive and by-product ovens, coke is obtained in the refining of petroleum, in the manufacture of coal gas, and in the refining of coal tar.

Petroleum coke.—Consideration of petroleum coke in this report may be dismissed with a few words. In refining crude oil there is often an ultimate residue in the form of a porous, carbonaceous mass. Its properties are much like those of coke made from coal, except that it is finer in texture, lacks the strength required for metallurgical coke, and is extraordinarily low in ash. The production of petroleum coke in recent years, according to statistics collected by the Bureau of Mines, has been as follows:

Petroleum coke produced and in stock in the United States, 1917–1925, in net tons

Year	Production	Stock at end of year	Year	Production	Stock at end of year
1917	539,366	7,585	1922	707,064	35,722
1918	559,663	22,605	1923	672,526	26,264
1919	603,459	21,146	1924	761,095	97,844
1920	576,613	31,469	1925	990,991	238,403
1921	604,465	74,508			

Gas-house coke.—In the coal-gas industry, as in petroleum refining, the coke obtained is a by-product. The process of carbonization is essentially the same as that in by-product ovens, though the type of oven is different. The coals used are selected for their yield in gas rather than for their coking qualities, and the coke formed is too soft for foundry or furnace use. It is, however, well adapted to the manufacture of water gas, a fact that has led to the common association of coal-gas and water-gas plants. In recent years about half of the gas-house coke produced has been used in making water gas, in heating retorts, or for boiler fuel about the plant where it was produced, the other half being sold, largely as domestic fuel.

Beehive and by-product coke.—Neither petroleum coke nor gas-house coke is adapted for metallurgical purposes, the use that consumes the great bulk of all the coke produced. Practically, therefore, the coke trade is concerned only with beehive coke and by-product coke, and to them the statistics of this report are confined. Although their product is interchangeable, there are fundamental differences between the beehive and by-product industries which must be kept in mind in examining the tables of this chapter. The competitive relations between the beehive and by-product industries have been discussed in previous reports of this series [1] and need not be treated here. Permanently higher prices for coal and gradually expanding markets for the by-products continue to foster the development of by-product coking, and the manufacture of beehive coke assumes more and more the character of an auxiliary agency called upon to furnish only the peak requirements of the metallurgical industry in times of active business.

By-product ovens operated by city gas companies included.—Between the by-product coke and the coal-gas industries the line is increasingly difficult to draw. Adaptation of the by-product coke oven to the needs of city gas manufacture has led a number of gas companies to install batteries of by-product ovens to supplement or even replace their coal or water gas plants. From the point of view of ownership and accounting these installations are a part of the gas utility system, and the Bureau of the Census therefore groups them with the manufactured-gas industry under the title "Gas manufactured, illuminating and heating."

But from other points of view these installations belong to the by-product coke industry. The coke they produce is superior to gas-house coke. In the practical operation of a by-product coke plant the fact that the gas may be distributed through city mains is of less consequence than the fact that the coke must be marketed for foundry, furnace, or household use. Considered with reference to oven design and the technique of manufacture, and still more with reference to the supply and demand for coke, they should be included with other by-product coke plants, and they are so included in the statistics published by the Bureau of Mines.

These differences in classification are followed advisedly by the Bureau of the Census and the Bureau of Mines after consultation with leaders of the gas and coke industries. The two offices have collaborated in the collection and analysis of the statistics for 1925. In order to enable the reader to reconcile the two sets of figures and to

[1] Mineral Resources, 1918, pt. 2, pp. 1446–1447, 1921; 1921, pt. 2, p. 374, 1923.

ascertain the total production of gas and coke from all sources without duplication, tables are given on pages 611–615 of this report in which the production of those by-product ovens operated by city gas companies is shown separately.

On pages 798 and 799 of Mineral Resources for 1922, Part II, will be found a summary of the output of manufactured gas and by-products from all sources, including both coke ovens and coal-gas, oil-gas, and water-gas plants, from which the relation of the by-product coke industry to other methods of gas manufacture may be seen.

STATISTICAL SUMMARY

TABLE 1.—*Salient figures of the coke industry in 1925*

	By-product	Beehive	Total
Coke produced:			
Quantity—net tons	39, 912, 159	11, 354, 784	51, 266, 943
Value	$210, 827, 571	$51, 731, 566	$262, 559, 137
Screenings and breeze produced:			
Quantity—net tons	3, 546, 099	272, 556	3, 818, 655
Value	$8, 945, 345	$453, 012	$9, 398, 357
Coal charged into ovens:			
Quantity—net tons	57, 109, 651	17, 422, 581	74, 532, 232
Value	$220, 204, 403	$35, 777, 750	$255, 982, 153
Average value	$3. 86	$2. 05	$3. 43
Average yield in per cent of coal charged:			
Coke	69. 9	65. 2	68. 8
Breeze (at plants actually recovering)	6. 2	4. 4	6. 0
Ovens:			
In existence Jan. 1	11, 413	60, 432	71, 845
In existence Dec. 31	11, 290	57, 587	68, 877
Dismantled during year	499	2, 910	3, 408
In course of construction Dec. 31	429		429
Daily coke capacity of ovens in existence Dec. 31—net tons	132, 010	(1)	(1)
Disposal of coke:			
Used by operator in blast furnace or affiliated works—			
Quantity—net tons	28, 223, 838	2, 032, 944	30, 256, 782
Value	$134, 245, 288	$9, 502, 959	$143, 748, 247
Sold for furnace use to affiliated corporations—			
Quantity—net tons	2, 641, 729	3, 479, 728	6, 121, 457
Value	$13, 794, 422	$16, 497, 801	$30, 292, 223
Merchant sales of furnace coke—			
Quantity—net tons	1, 736, 112	3, 895, 983	5, 632, 095
Value	$9, 954, 964	$15, 722, 122	$25, 677, 086
Sold for foundry use—			
Quantity—net tons	1, 833, 372	1, 153, 665	2, 987, 037
Value	$14, 630, 450	$5, 971, 595	$20, 602, 045
Sold for domestic use—			
Quantity—net tons	4, 085, 068	392, 698	4, 477, 766
Value	$28, 521, 425	$2, 240, 546	$30, 761, 971
Sold for industrial and other use—			
Quantity—net tons	2, 072, 635	572, 949	2, 645, 584
Value	$14, 849, 829	$2, 494, 947	$17, 344, 776
Disposal of screenings and breeze:			
Used by operator—			
Quantity—net tons	2, 735, 738	79, 432	2, 815, 170
Value	$5, 521, 262	$94, 406	$5, 615, 668
Sold—			
Quantity—net tons	849, 444	68, 372	917, 816
Value	$3, 039, 718	$192, 449	$3, 232, 167
Average receipts per ton sold:			
Furnace coke (merchant sales)	$5. 73	$4. 04	$4. 56
Foundry coke	$7. 98	$5. 18	$6. 90
Domestic coke	$6. 98	$5. 71	$6. 87
Industrial and other coke	$7. 16	$4. 35	$6. 56
Screenings and breeze	$3. 58	$2. 81	$3. 52
By-products produced:			
Gas—M cubic feet	639, 644, 062		639, 644, 062
Tar—gallons	480, 848, 814		480, 848, 814
Ammonium sulphate or equivalent—pounds	1, 278, 037, 618		1, 278, 037, 618
Crude light oil—gallons	146, 443, 106		146, 443, 106
Value of by-products sold:			
Gas (surplus)	$61, 484, 219		$61, 484, 219
Tar	$11, 903, 196		$11, 903, 196
Ammonium sulphate or equivalent	$27, 513, 793		$27, 513, 793
Crude light oil and derivatives	$21, 594, 357		$21, 594, 357

[1] Data not available.

TABLE 2.—*Coke produced in by-product and beehive coke ovens in the United States, 1924–25*

[Exclusive of screenings and breeze]

State	By-product								Beehive						Total	
	Plants	Ovens		Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens		Ovens	Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens		Coke produced (net tons)	Value of coke at ovens
		Built	Under construction Dec. 31				Total	Per ton					Total	Per ton		
1924																
Alabama	7	1,196	25	6,375,171	68.8	4,386,372	$16,563,223	$3.78	6,199	256,240	60.4	154,686	$840,843	$5.44	4,541,058	$17,404,066
Colorado	1	120	-------	754,790	69.3	523,405	(1)	(1)	1,696	330,226	64.2	212,115	(1)	(1)	735,520	(1)
Georgia	-------	-------	-------	-------	-------	-------	-------	-------	151	14,400	56.1	8,081	71,355	8.83	8,081	71,355
Illinois	7	739	110	3,397,248	69.3	2,355,474	20,187,519	8.57	-------	-------	-------	-------	-------	-------	2,355,474	20,187,519
Indiana	6	1,133	19	5,828,314	73.3	4,272,435	30,394,497	7.11	-------	-------	-------	-------	-------	-------	4,272,435	30,394,497
Kentucky	1	108	-------	(2)	(2)	(2)	(2)	(2)	795	146,794	54.0	79,248	(1)	(1)	(2)	(2)
Maryland	1	300	-------	1,103,984	73.4	810,118	(1)	(1)	-------	-------	-------	-------	-------	-------	810,118	(1)
Massachusetts	1	400	11	574,632	69.2	397,640	(1)	(1)	-------	-------	-------	-------	-------	-------	397,640	(1)
Michigan	5	420	2	2,408,925	73.5	1,770,547	11,914,028	6.73	-------	-------	-------	-------	-------	-------	1,770,547	11,914,028
Minnesota	3	220	-------	744,567	69.1	514,764	4,903,891	9.53	-------	-------	-------	-------	-------	-------	514,764	4,903,891
Missouri	1	64	-------	(2)	(2)	(2)	(2)	(2)	-------	-------	-------	-------	-------	-------	(2)	(2)
New Jersey	2	202	-------	1,202,732	72.3	869,120	(1)	(1)	-------	-------	-------	-------	-------	-------	869,120	(1)
New Mexico	-------	-------	-------	-------	-------	-------	-------	-------	1,030	136,212	61.0	83,070	(1)	(1)	83,070	(1)
New York	5	686	55	2,265,062	70.7	1,600,669	11,108,944	6.94	-------	-------	-------	-------	-------	-------	1,600,669	11,108,944
Ohio	14	1,689	-------	8,422,760	67.9	5,723,074	31,008,209	5.42	205	168,648	65.0	109,625	(1)	(1)	5,832,699	(1)
Oklahoma	-------	-------	-------	-------	-------	-------	-------	-------	300	-------	-------	-------	-------	-------	-------	-------
Pennsylvania	11	3,420	25	12,555,568	67.1	8,426,155	34,674,512	4.12	36,030	12,989,648	65.4	8,501,282	37,893,584	4.46	16,927,437	72,568,096
Rhode Island	1	40	-------	(2)	(2)	(2)	(2)	(2)	-------	-------	-------	-------	-------	-------	(2)	(2)
Tennessee	1	24	-------	103,314	73.3	75,720	376,328	4.97	1,555	240,293	52.9	131,755	635,736	4.83	207,475	1,012,064
Utah	1	33	-------	190,035	51.2	97,350	(1)	(1)	819	268,808	59.4	159,744	1,310,929	8.21	257,094	(1)
Virginia	-------	-------	-------	-------	-------	-------	-------	-------	3,234	769,990	63.0	485,064	2,343,081	4.83	485,064	2,343,081
Washington	1	20	-------	70,968	56.2	39,903	283,710	7.11	408	49,339	64.3	31,712	289,934	9.14	71,615	573,644
West Virginia	4	311	-------	1,484,951	67.3	998,914	4,402,186	4.41	8,010	534,712	61.7	329,655	1,646,452	4.99	1,328,569	6,048,638
Wisconsin	2	238	-------	(2)	(2)	(2)	(2)	(2)	-------	-------	-------	-------	-------	-------	(2)	(2)
Combined States	-------	-------	-------	1,578,318	71.1	1,121,908	9,387,943	8.37	-------	-------	-------	-------	-------	-------	1,201,156	9,843,475
Undistributed	-------	-------	-------	-------	-------	-------	20,485,019	7.59	-------	-------	-------	-------	3,319,638	6.86	-------	55,668,263
	75	11,413	247	49,061,339	69.3	33,983,568	195,690,009	5.76	60,432	15,914,310	64.6	10,286,037	48,351,552	4.70	44,269,605	244,041,561

[1] Included under "Undistributed."

[2] Included under "Combined States."

TABLE 2.—*Coke produced in by-product and beehive coke ovens in the United States, 1924–25*—Continued

[Exclusive of screenings and breeze]

State	By-product							Beehive						Total	
	Plants	Ovens		Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens	Ovens	Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens		Coke produced (net tons)	Value of coke at ovens
		Built	Under construction Dec. 31				Total / Per ton					Total	Per ton		
1925															
Alabama	8	1,276	-------	6,516,689	70.3	4,582,153	$16,347,971 / $3.57	4,961	137,106	64.4	88,328	$453,870	$5.14	4,670,481	$16,801,841
Colorado	1	120	-------	706,948	69.3	489,657	(1) / (1)	1,681	239,004	64.8	154,824	(1)	(1)	644,481	(1)
Georgia								151	8,651	56.9	4,925	38,464	7.81	4,925	38,464
Illinois	7	849	-------	4,224,420	71.3	3,011,497	22,568,845 / 7.49							3,011,497	22,568,845
Indiana	7	1,177	212	6,866,855	74.9	5,141,940	36,635,104 / 7.12							5,141,940	36,635,104
Kentucky	1	108	-------	(2)	(2)	(2)	(2) / (2)	795	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Maryland	1	300	-------	1,383,344	73.4	1,019,209	(1) / (1)							1,019,209	(1)
Massachusetts	2	419	-------	797,699	67.1	535,302	(1) / (1)							535,302	(1)
Michigan	5	420	2	2,450,275	71.5	1,751,118	11,708,519 / 6.69							1,751,118	11,708,519
Minnesota	3	220	-------	791,992	65.4	518,355	4,992,024 / 9.63							518,355	4,992,024
Missouri	1	64	-------	(2)	(2)	(2)	(2) / (2)							(2)	(2)
New Jersey	2	206	-------	1,242,275	72.8	903,997	(1) / (1)							903,997	(1)
New Mexico								1,030	(2)	(2)	(2)	(2)	(2)	(2)	(2)
New York	6	506	155	3,074,465	72.2	2,219,409	12,968,066 / 5.84							2,219,409	12,968,066
Ohio	14	1,689	-------	10,336,068	68.7	7,105,129	34,190,691 / 4.81	204	240,828	64.8	156,058	(1)	(1)	7,261,187	(1)
Oklahoma								300							
Pennsylvania	12	3,220	60	14,679,836	67.1	9,853,262	34,518,863 / 3.50	34,668	14,572,282	65.7	9,574,341	41,875,615	4.37	19,427,603	76,394,478
Rhode Island	1	40	-------	(2)	(2)	(2)	(2) / (2)							(2)	(2)
Tennessee	1	24	-------	125,860	70.6	88,879	471,059 / 5.30	1,675	200,373	63.7	127,609	690,041	5.40	216,488	1,161,100
Utah	1	33	-------	316,285	53.2	168,150	(1) / (1)	819	247,473	59.0	146,009	1,240,256	8.49	314,159	(1)
Virginia								3,124	661,193	63.8	421,691	1,901,623	4.51	421,691	1,901,623
Washington	1	20	-------	68,655	59.3	40,757	289,782 / 7.11	332	62,644	61.5	38,500	327,483	8.51	79,257	617,265
West Virginia	4	311	-------	1,526,820	69.2	1,055,992	4,479,866 / 4.24	7,847	804,055	30.9	490,040	2,168,879	4.43	1,546,032	6,648,745
Wisconsin	2	288	-------	(2)	(2)	(2)	(2) / (2)							(2)	(2)
Combined States				2,001,165	71.3	1,427,353	10,555,681 / 7.39		248,972	61.2	152,459	1,004,350	6.59	1,579,812	11,560,031
Undistributed							21,101,100 / 6.77					2,030,985	6.53		58,563,032
	80	11,290	429	57,109,651	69.9	39,912,159	210,827,571 / 5.28	57,587	17,422,581	65.2	11,354,784	51,731,566	4.56	51,266,943	262,559,137

[1] Included under "Undistributed."

[2] Included under "Combined States."

COKE AND COKE BREEZE

GROWTH OF INDUSTRY

TABLE 3.—*Beehive and by-product coke produced in the United States, 1880–1925*

Year	By-product	Beehive	Total	Year	By-product	Beehive	Total
1880		3,338,300	3,338,300	1903	1,882,394	23,391,887	25,274,281
1881		4,113,760	4,113,760	1904	2,608,229	21,052,877	23,661,106
1882		4,793,321	4,793,321	1905	3,462,348	28,768,781	32,231,129
1883		5,464,721	5,464,721	1906	4,558,127	31,843,090	36,401,217
1884		4,873,805	4,873,805	1907	5,607,899	35,171,665	40,779,564
1885		5,106,696	5,106,696	1908	4,201,226	21,832,292	26,033,518
1886		6,845,369	6,845,369	1909	6,254,644	33,060,421	39,315,065
1887		7,611,705	7,611,705	1910	7,138,734	34,570,076	41,708,810
1888		8,540,030	8,540,030	1911	7,847,845	27,703,644	35,551,489
1889		10,258,022	10,258,022	1912	11,115,164	32,868,435	43,983,599
1890		11,508,021	11,508,021	1913	12,714,700	33,584,830	46,299,530
1891		10,352,688	10,352,688	1914	11,219,943	23,335,971	34,555,914
1892		12,010,829	12,010,829	1915	14,072,895	27,508,255	41,581,150
1893	12,850	9,464,730	9,477,580	1916	19,069,361	35,464,224	54,533,585
1894	16,500	9,187,132	9,203,632	1917	22,439,280	33,167,548	55,606,828
1895	18,521	13,315,193	13,333,714	1918	25,997,580	30,480,792	56,478,372
1896	83,038	11,705,735	11,788,773	1919	25,137,621	19,042,936	44,180,557
1897	261,912	13,027,072	13,288,984	1920	30,833,951	20,511,092	51,345,043
1898	294,445	15,752,764	16,047,209	1921	19,749,580	5,538,042	25,287,622
1899	906,534	18,762,035	19,668,569	1922	28,550,545	8,573,467	37,124,012
1900	1,075,727	19,457,621	20,533,348	1923	37,597,664	19,379,870	56,977,534
1901	1,179,900	20,615,983	21,795,883	1924	33,983,568	10,286,037	44,269,605
1902	1,403,588	23,998,142	25,401,730	1925	39,912,159	11,354,784	51,266,943

TABLE 4.—*Statistical summary of the manufacture of coke in the United States, 1916–1925*

Year	Plants	Ovens in existence	Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens [1]	
						Total	Per ton
1916	499	98,804	81,609,460	66.8	54,533,585	$170,841,197	$3.13
1917	482	95,896	83,752,371	66.4	55,606,828	298,243,017	5.36
1918	466	93,914	85,028,018	66.4	56,478,372	382,324,368	6.77
1919	464	92,939	65,587,918	67.4	44,180,557	258,339,740	5.85
1920	416	86,179	76,190,832	67.4	51,345,043	475,981,215	9.27
1921	374	77,156	37,188,557	68.0	25,287,622	147,673,095	5.84
1922	366	75,170	54,338,538	68.3	37,124,012	238,313,323	6.42
1923	361	73,505	84,359,943	67.5	56,977,534	373,496,898	6.56
1924	347	71,845	64,975,649	68.1	44,269,605	244,041,561	5.51
1925	347	68,877	74,532,232	68.8	51,266,943	262,559,137	5.12

Year	By-product coke				Beehive coke			
	Quantity		Value [1]		Quantity		Value [1]	
	Net tons	Per cent	Dollars	Per cent	Net tons	Per cent	Dollars	Per cent
1916	19,069,361	35.0	75,373,070	44.1	35,464,224	65.0	95,468,127	55.9
1917	22,439,280	40.4	138,643,153	46.5	33,167,548	59.6	159,599,864	53.5
1918	25,997,580	46.0	193,018,785	50.5	30,480,792	54.0	189,305,583	49.5
1919	25,137,621	56.9	160,244,768	62.0	19,042,936	43.1	98,094,972	38.0
1920	30,833,951	60.0	313,028,732	65.8	20,511,092	40.0	162,952,483	34.2
1921	19,749,580	78.1	117,506,646	79.6	5,538,042	21.9	30,166,449	20.4
1922	28,550,545	76.9	188,276,767	79.0	8,573,467	23.1	50,036,556	21.0
1923	37,597,664	66.0	257,591,318	69.0	19,379,870	34.0	115,905,580	31.0
1924	33,983,568	76.8	195,690,009	80.2	10,286,037	23.2	48,351,552	19.8
1925	39,912,159	77.9	210,827,571	80.3	11,354,784	22.1	51,731,566	19.7

[1] Includes operators' statements of the value of coke consumed by them in associated enterprises but not sold, except that in 1918 and 1920 the value of such coke was estimated for each State at the average value for that State of the part of the product reported sold.

MONTHLY AND WEEKLY PRODUCTION

TABLE 5.—*By-product coke produced in the United States, 1914–1925, by months, and average per day, in net tons* [1]

Month	1914		1915		1916		1917	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	898,000	29,000	858,000	28,000	1,506,000	49,000	1,788,000	58,000
February	853,000	30,000	844,000	30,000	1,449,000	50,000	1,807,000	65,000
March	1,032,000	33,000	971,000	31,000	1,564,000	50,000	1,813,000	58,000
April	987,000	33,000	1,027,000	34,000	1,506,000	50,000	1,859,000	62,000
May	976,000	31,000	1,084,000	35,000	1,583,000	51,000	1,879,000	61,000
June	920,000	31,000	1,098,000	31,000	1,526,000	51,000	1,880,000	63,000
July	954,000	31,000	1,196,000	39,000	1,583,000	51,000	1,882,000	61,000
August	1,010,000	33,000	1,281,000	41,000	1,621,000	52,000	1,915,000	62,000
September	976,000	33,000	1,337,000	45,000	1,621,000	54,000	1,919,000	64,000
October	942,000	30,000	1,421,000	46,000	1,716,000	55,000	1,898,000	61,000
November	830,000	28,000	1,450,000	48,000	1,659,000	55,000	1,900,000	63,000
December	842,000	27,000	1,506,000	49,000	1,735,000	56,000	1,899,000	61,000
	11,220,000	31,000	14,073,000	36,000	19,069,000	52,000	22,439,000	61,000

Month	1918		1919		1920		1921	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	1,638,000	53,000	2,445,000	79,000	2,426,000	78,000	2,259,000	73,000
February	1,534,000	55,000	2,153,000	77,000	2,343,000	81,000	1,872,000	67,000
March	2,028,000	65,000	2,285,000	74,000	2,646,000	85,000	1,757,000	57,000
April	2,002,000	67,000	2,025,000	68,000	2,267,000	75,000	1,506,000	50,000
May	2,106,000	68,000	1,906,000	61,000	2,400,000	77,000	1,577,000	51,000
June	2,080,000	69,000	1,935,000	65,000	2,487,000	83,000	1,396,000	47,000
July	2,288,000	74,000	2,244,000	72,000	2,658,000	86,000	1,286,000	41,000
August	2,366,000	76,000	2,266,000	73,000	2,742,000	88,000	1,371,000	44,000
September	2,392,000	80,000	2,168,000	72,000	2,744,000	91,000	1,411,000	47,000
October	2,547,000	82,000	1,748,000	56,000	2,915,000	94,000	1,720,000	55,000
November	2,496,000	83,000	1,971,000	66,000	2,679,000	89,000	1,751,000	58,000
December	2,521,000	81,000	1,992,000	64,000	2,527,000	82,000	1,844,000	59,000
	25,998,000	71,000	25,138,000	69,000	30,834,000	84,000	19,750,000	54,000

Month	1922		1923		1924		1925	
	Total	Daily average	Total	Daily average	Total	Daily average	Total	Daily average
January	1,886,000	61,000	3,102,000	100,000	3,093,000	100,000	3,404,000	110,000
February	1,800,000	64,000	2,862,000	102,000	2,980,000	103,000	3,118,000	111,000
March	2,137,000	69,000	3,258,000	105,000	3,220,000	104,000	3,449,000	111,000
April	2,206,000	74,000	3,208,000	107,000	3,009,000	100,000	3,308,000	110,000
May	2,544,000	82,000	3,330,000	107,000	2,807,000	91,000	3,280,000	106,000
June	2,591,000	86,000	3,168,000	106,000	2,425,000	81,000	3,151,000	105,000
July	2,501,000	81,000	3,268,000	105,000	2,369,000	76,000	3,167,000	102,000
August	1,822,000	59,000	3,241,000	105,000	2,445,000	79,000	3,159,000	102,000
September	2,249,000	75,000	3,115,000	104,000	2,545,000	85,000	3,178,000	106,000
October	2,812,000	91,000	3,102,000	100,000	2,899,000	94,000	3,395,000	110,000
November	2,931,000	98,000	2,943,000	98,000	2,926,000	98,000	3,550,000	118,000
December	3,069,000	99,000	3,001,000	97,000	3,266,000	105,000	3,753,000	121,000
	28,551,000	78,000	37,598,000	103,000	33,984,000	93,000	39,912,000	109,000

[1] Exclusive of screenings and breeze. Based upon reports by the operators. When demand permits, operation of the ovens is continuous and the daily average is the rate per calendar day.

The production of coke is regarded by many students of "business cycles" as a valuable business barometer. For indicating business conditions monthly data are much more useful than annual data, and a record extending over many years is desirable in order to establish

the normal monthly fluctuation. Tables carrying the monthly production of coke back to 1912 were published in Mineral Resources, 1922, Part II, pages 683–686. In response to requests for still earlier figures, the authors have compiled Table 6, which gives the monthly production of beehive coke as far back as 1897. Although the figures prior to 1912 are estimates, based upon the reported shipments from the Connellsville and Lower Connellsville districts prorated to equal the known total production of the country as a whole, they are believed to be trustworthy. In Table 7 the original figures of shipments from the Connellsville and Lower Connellsville regions are given, as reported by the Connellsville Courier and an earlier newspaper.

No data on the monthly production of by-product coke are available prior to 1912.

TABLE 6.—*Estimated monthly production of beehive coke in the United States, 1897–1925, in thousand net tons* [1]

Month	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906
January	915	1,355	1,444	1,918	1,618	1,992	1,989	1,217	2,063	2,652
February	878	1,242	1,296	1,743	1,536	1,648	1,681	1,432	2,170	2,285
March	982	1,387	1,555	1,999	1,881	1,925	2,235	1,799	2,408	2,680
April	929	1,306	1,541	1,881	1,751	2,071	2,359	1,894	2,963	2,556
May	945	1,267	1,489	1,788	1,773	2,208	2,258	1,943	2,333	2,770
June	943	1,186	1,551	1,669	1,758	2,095	2,418	1,602	2,177	2,634
July	1,100	1,203	1,637	1,403	1,712	2,158	2,326	1,504	2,609	2,647
August	1,060	1,234	1,647	1,336	1,796	2,102	2,124	1,653	2,135	2,683
September	1,179	1,200	1,506	1,289	1,654	2,115	2,172	1,954	2,776	2,564
October	1,389	1,363	1,619	1,406	1,844	2,089	1,826	1,945	2,299	2,946
November	1,319	1,574	1,733	1,438	1,750	1,831	1,104	2,045	2,394	2,790
December	1,388	1,436	1,744	1,588	1,543	1,764	960	2,065	2,442	2,636
	13,027	15,753	18,762	19,458	20,616	23,998	23,392	21,053	28,769	31,843

Month	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
January	3,139	1,514	2,241	3,612	2,025	2,553	3,124	2,105	1,446	2,919
February	3,005	1,654	2,125	3,306	2,208	2,589	2,880	2,137	1,553	2,887
March	3,145	1,716	2,204	3,556	2,750	2,879	2,910	2,653	1,865	3,263
April	3,158	1,577	2,128	3,246	2,407	2,771	2,896	2,343	1,841	2,875
May	3,304	1,550	2,295	2,825	2,279	2,884	3,001	1,993	1,936	3,044
June	3,100	1,576	2,657	2,858	2,204	2,657	2,807	1,890	2,210	2,918
July	3,219	1,748	2,985	2,675	2,133	2,538	2,833	1,977	2,345	2,721
August	3,363	1,943	3,051	2,708	2,299	2,778	2,810	1,888	2,553	2,999
September	3,050	1,991	3,169	2,571	2,366	2,573	2,756	1,793	2,582	3,016
October	3,337	2,103	3,386	2,683	2,416	2,941	2,870	1,665	3,029	3,079
November	2,159	2,032	3,413	2,317	2,350	2,895	2,560	1,363	3,025	2,934
December	1,253	2,428	3,406	2,213	2,267	2,810	2,204	1,529	3,093	2,809
	35,172	21,832	33,060	34,570	27,704	32,868	33,585	23,336	27,508	35,464

Month	1917	1918	1919	1920	1921	1922	1923	1924	1925
January	2,923	2,256	2,366	1,946	1,088	529	1,594	1,228	1,241
February	2,490	2,225	1,767	1,705	870	586	1,598	1,288	1,117
March	3,139	2,652	1,714	1,976	578	781	1,886	1,429	1,066
April	2,814	2,591	1,277	1,579	330	564	1,914	1,148	854
May	2,861	2,743	1,101	1,671	302	465	1,972	810	710
June	2,755	2,713	1,143	1,683	233	491	1,892	590	632
July	2,754	2,835	1,457	1,666	181	476	1,706	476	561
August	2,650	2,650	1,681	1,749	250	567	1,611	462	641
September	2,727	2,591	1,736	1,731	291	649	1,480	556	794
October	2,780	2,621	1,504	1,716	418	935	1,391	671	1,068
November	2,677	2,348	1,629	1,605	480	1,214	1,189	670	1,286
December	2,598	2,256	1,668	1,484	517	1,316	1,147	958	1,385
	33,168	30,481	19,043	20,511	5,538	8,573	19,380	10,286	11,355

[1] The estimates for 1897–1911 are based upon the known total production of the United States for the year, as recorded in Mineral Resources, prorated by months in accordance with the monthly shipments from the Connellsville and Lower Connellsville regions as reported by the Connellsville Courier. These shipments constituted somewhat more than half of the total production during the period. The estimates for 1912–1925 are based on railroad shipments by the principal carriers, prorated to the total production for the year as reported by the operators.

TABLE 7.—*Coke shipped from the Connellsville and Lower Connellsville districts, Pennsylvania, 1894–1925, in net tons* [1]

Month	1894	1895	1896	1897	1898	1899	1900	1901
January	337,000	566,000	617,458	485,624	727,739	779,792	1,001,882	989,367
February	394,000	607,000	529,347	466,206	667,287	699,474	910,729	939,756
March	445,000	851,000	550,470	521,484	744,987	839,763	1,044,588	1,150,734
April	396,000	569,000	547,625	493,027	701,317	831,964	982,551	1,070,708
May	64,000	631,000	528,822	501,857	680,754	804,023	934,186	1,084,458
June	221,000	585,000	477,227	500,483	636,877	837,123	872,316	1,075,000
July	220,000	632,000	470,988	583,867	646,065	883,735	732,981	1,046,996
August	450,000	802,000	330,468	562,703	662,880	889,078	698,065	1,099,417
September	687,000	682,000	257,547	625,902	644,422	813,190	673,336	1,011,439
October	581,000	714,000	304,998	737,498	731,602	874,357	734,748	1,128,183
November	589,000	914,000	323,419	700,352	844,907	935,608	751,443	1,070,204
December	609,000	745,000	473,296	736,049	771,275	941,657	829,409	943,687
	4,993,000	8,298,000	5,411,665	6,915,052	8,460,112	10,129,764	10,166,234	12,609,949

Month	1902	1903	1904	1905	1906	1907	1908	1909
January	1,173,860	1,134,272	718,382	1,283,152	1,665,747	1,698,475	742,096	1,205,650
February	971,048	958,984	845,428	1,350,128	1,435,452	1,625,783	810,436	1,143,487
March	1,133,978	1,274,863	1,062,192	1,497,756	1,683,212	1,701,342	841,059	1,185,814
April	1,219,928	1,346,053	1,118,043	1,843,502	1,604,906	1,708,590	772,915	1,144,751
May	1,300,648	1,288,550	1,146,907	1,451,554	1,739,743	1,787,611	759,813	1,235,044
June	1,234,596	1,379,257	945,520	1,354,470	1,654,209	1,677,488	772,367	1,429,289
July	1,271,045	1,327,239	887,402	1,622,998	1,662,545	1,741,612	856,843	1,605,937
August	1,238,260	1,211,826	975,724	1,328,002	1,685,036	1,787,190	952,492	1,641,287
September	1,246,095	1,239,265	1,153,471	1,726,734	1,610,509	1,650,207	975,606	1,704,919
October	1,230,860	1,041,966	1,148,089	1,430,238	1,850,450	1,805,307	1,030,552	1,821,444
November	1,079,037	629,768	1,207,131	1,488,942	1,752,234	1,167,796	995,807	1,835,745
December	1,039,385	513,187	1,219,174	1,519,050	1,655,283	677,657	1,190,036	1,832,465
	14,138,740	13,345,230	12,427,463	17,896,526	19,999,326	19,029,058	10,700,022	17,785,832

Month	1910	1911	1912	1913	1914	1915	1916	1917
January	1,952,406	1,194,047	1,546,892	1,868,149	1,222,282	940,781	1,793,951	1,564,173
February	1,787,164	1,302,098	1,560,182	1,715,917	1,270,107	1,045,739	1,781,068	1,288,763
March	1,922,575	1,621,301	1,747,959	1,728,709	1,594,267	1,253,559	2,038,812	1,618,969
April	1,754,654	1,419,369	1,697,734	1,730,183	1,423,048	1,268,292	1,861,290	1,553,247
May	1,527,515	1,343,879	1,776,415	1,817,805	1,198,651	1,310,639	1,937,404	1,649,989
June	1,544,964	1,299,295	1,635,824	1,685,635	1,129,821	1,486,845	1,842,521	1,563,616
July	1,446,294	1,257,820	1,564,377	1,710,435	1,189,834	1,618,199	1,748,365	1,539,931
August	1,464,060	1,355,774	1,704,307	1,696,368	1,157,942	1,657,203	1,806,422	1,554,935
September	1,390,140	1,394,752	1,555,483	1,649,368	1,112,653	1,683,414	1,771,405	1,464,200
October	1,450,717	1,424,232	1,782,302	1,719,045	1,028,764	1,851,938	1,768,800	1,509,903
November	1,252,797	1,385,627	1,736,888	1,496,000	823,595	1,873,405	1,719,715	1,350,374
December	1,196,436	1,335,974	1,692,510	1,280,287	924,674	1,926,202	1,584,749	1,221,257
	18,689,722	16,334,168	20,000,873	20,097,901	14,075,638	17,921,216	21,654,502	17,884,357

Month	1918	1919	1920	1921	1922	1923	1924	1925
January	1,021,055	1,224,220	1,082,289	735,897	377,003	1,046,630	937,790	904,110
February	991,871	890,922	967,122	552,568	397,537	1,048,425	921,070	795,690
March	1,436,821	864,903	1,110,550	361,646	584,497	1,292,435	1,024,770	785,080
April	1,459,248	645,028	799,578	198,966	377,433	1,270,355	800,420	583,740
May	1,532,634	470,475	749,537	186,256	247,145	1,342,545	504,740	349,400
June	1,438,700	536,381	796,698	130,324	276,304	1,306,750	303,370	325,800
July	1,578,130	760,475	778,345	92,880	283,472	1,196,660	243,090	265,780
August	1,492,065	1,010,887	909,270	158,250	371,499	1,144,790	205,430	414,510
September	1,423,236	1,021,096	879,297	188,664	451,240	1,005,200	263,520	513,590
October	1,410,493	699,156	921,753	257,499	628,333	914,800	329,430	673,920
November	1,136,355	1,140,109	889,173	303,532	799,087	781,690	451,950	830,460
December	1,160,072	1,026,312	854,615	405,935	872,950	754,060	668,980	953,040
	16,080,590	10,289,964	10,738,227	3,572,417	5,666,500	13,104,340	6,654,560	7,395,120

[1] From the Connellsville Courier. The figures for 1894 and 1895 are computed from the records of cars shipped, compiled from the files of the American Manufacturer of Pittsburgh, assuming 19.17 tons per car, the average load in 1898. For the period 1901–1906, the figures also include the shipments from the small "Upper Connellsville" district, and are not exactly comparable with figures for the other years.

TABLE 8.—*Total coke produced in the United States, 1914–1925, by months, in net tons*

Month	1914	1915	1916	1917	1918	1919
January	3,003,000	2,304,000	4,425,000	4,711,000	3,894,000	4,811,000
February	2,990,000	2,427,000	4,336,000	4,297,000	3,759,000	3,920,000
March	3,685,000	2,836,000	4,827,000	4,952,000	4,680,000	3,999,000
April	3,330,000	2,868,000	4,381,000	4,673,000	4,593,000	3,302,000
May	2,969,000	3,020,000	4,627,000	4,740,000	4,849,000	3,007,000
June	2,810,000	3,308,000	4,444,000	4,635,000	4,793,000	3,078,000
July	2,931,000	3,541,000	4,304,000	4,636,000	5,123,000	3,701,000
August	2,898,000	3,834,000	4,620,000	4,565,000	5,016,000	3,947,000
September	2,769,000	3,919,000	4,637,000	4,646,000	4,983,000	3,904,000
October	2,607,000	4,450,000	4,795,000	4,678,000	5,168,000	3,252,000
November	2,193,000	4,475,000	4,593,000	4,577,000	4,844,000	3,660,000
December	2,371,000	4,599,000	4,544,000	4,497,000	4,777,000	3,660,000
	34,556,000	41,581,000	54,533,000	55,607,000	56,479,000	44,181,000

Month	1920	1921	1922	1923	1924	1925
January	4,372,000	3,347,000	2,415,000	4,696,000	4,321,000	4,645,000
February	4,048,000	2,742,000	2,386,000	4,460,000	4,268,000	4,235,000
March	4,622,000	2,335,000	2,918,000	5,144,000	4,649,000	4,515,000
April	3,846,000	1,836,000	2,770,000	5,122,000	4,157,000	4,162,000
May	4,071,000	1,879,000	3,009,000	5,302,000	3,617,000	3,990,000
June	4,170,000	1,629,000	3,085,000	5,060,000	3,015,000	3,783,000
July	4,324,000	1,467,000	2,977,000	4,974,000	2,845,000	3,728,000
August	4,491,000	1,621,000	2,389,000	4,852,000	2,907,000	3,800,000
September	4,475,000	1,702,000	2,898,000	4,595,000	3,101,000	3,972,000
October	4,631,000	2,138,000	3,747,000	4,493,000	3,570,000	4,463,000
November	4,284,000	2,231,000	4,145,000	4,132,000	3,596,000	4,836,000
December	4,011,000	2,361,000	4,385,000	4,148,000	4,224,000	5,138,000
	51,345,000	25,288,000	37,124,000	56,978,000	44,270,000	51,267,000

TABLE 9.—*Beehive coke produced in the United States in 1925, by weeks*

[Estimated from railroad shipments]

Week ended—	Net tons	Week ended—	Net tons	Week ended—	Net tons
Jan. 1–3	136,000	May 9	151,000	Sept. 19	181,000
Jan. 10	281,000	May 16	144,000	Sept. 26	191,000
Jan. 17	278,000	May 23	154,000	Oct. 3	198,000
Jan. 24	281,000	May 30	141,000	Oct. 10	215,000
Jan. 31	265,000	June 6	137,000	Oct. 17	239,000
Feb. 7	293,000	June 13	145,000	Oct. 24	237,000
Feb. 14	281,000	June 20	138,000	Oct. 31	276,000
Feb. 21	275,000	June 27	136,000	Nov. 7	310,000
Feb. 28	269,000	July 4	126,000	Nov. 14	313,000
Mar. 7	258,000	July 11	137,000	Nov. 21	301,000
Mar. 14	258,000	July 18	135,000	Nov. 28	310,000
Mar. 21	240,000	July 25	131,000	Dec. 5	317,000
Mar. 28	234,000	Aug. 1	129,000	Dec. 12	305,000
Apr. 4	234,000	Aug. 8	130,000	Dec. 19	332,000
Apr. 11	225,000	Aug. 15	131,000	Dec. 26	277,000
Apr. 18	213,000	Aug. 22	152,000	Dec. 28–31	207,000
Apr. 25	201,000	Aug. 29	175,000		
May 2	179,000	Sept. 5	176,000		11,355,000
		Sept. 12	177,000		

TABLE 10.—*By-product coke produced in the United States, 1924–25, by months and by States, in net tons*[1]

State	January	February	March	April	May	June	July	August	September	October	November	December	Total
1924													
Alabama	365,000	362,000	388,000	364,000	383,000	355,000	354,000	357,000	349,000	369,000	363,000	377,000	4,386,000
Colorado	37,000	43,000	51,000	52,000	48,000	48,000	51,000	48,000	37,000	37,000	34,000	37,000	523,000
Illinois	272,000	242,000	252,000	248,000	200,000	150,000	144,000	141,000	142,000	168,000	174,000	223,000	2,356,000
Indiana	428,000	407,000	437,000	417,000	393,000	298,000	250,000	253,000	275,000	337,000	348,000	429,000	4,272,000
Maryland	68,000	74,000	93,000	80,000	68,000	45,000	41,000	40,000	54,000	75,000	81,000	91,000	810,000
Massachusetts	37,000	36,000	35,000	31,000	34,000	31,000	30,000	28,000	28,000	33,000	35,000	40,000	398,000
Michigan	146,000	138,000	150,000	146,000	150,000	143,000	148,000	151,000	147,000	152,000	149,000	151,000	1,771,000
Minnesota	60,000	55,000	59,000	48,000	48,000	37,000	33,000	32,000	33,000	38,000	36,000	36,000	515,000
New Jersey	75,000	68,000	69,000	69,000	67,000	73,000	72,000	77,000	75,000	79,000	73,000	72,000	869,000
New York	153,000	146,000	156,000	145,000	131,000	108,000	100,000	97,000	104,000	124,000	160,000	177,000	1,601,000
Ohio	537,000	505,000	573,000	532,000	450,000	403,000	370,000	387,000	415,000	469,000	494,000	588,000	5,723,000
Pennsylvania	711,000	702,000	745,000	688,000	634,000	545,000	600,000	660,000	705,000	816,000	779,000	841,000	8,426,000
Tennessee	7,000	7,000	7,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	7,000	76,000
Utah				2,000	11,000	11,000	12,000	11,000	12,000	13,000	12,000	13,000	97,000
Washington	3,000	3,000	4,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000	4,000	4,000	40,000
West Virginia	91,000	85,000	92,000	89,000	92,000	84,000	72,000	73,000	80,000	85,000	80,000	76,000	999,000
Kentucky, Missouri, Rhode Island, and Wisconsin	103,000	107,000	109,000	89,000	89,000	85,000	83,000	81,000	80,000	94,000	98,000	104,000	1,122,000
	3,093,000	2,980,000	3,220,000	3,009,000	2,807,000	2,425,000	2,369,000	2,445,000	2,545,000	2,899,000	2,926,000	3,266,000	33,984,000

1925													
Alabama	383,000	346,000	388,000	386,000	391,000	367,000	366,000	371,000	364,000	393,000	401,000	426,000	4,582,000
Colorado	38,000	35,000	38,000	50,000	53,000	51,000	46,000	22,000	24,000	34,000	47,000	52,000	490,000
Illinois	250,000	264,000	297,000	274,000	247,000	224,000	226,000	225,000	224,000	249,000	254,000	278,000	3,012,000
Indiana	454,000	412,000	460,000	448,000	448,000	426,000	419,000	404,000	393,000	410,000	425,000	443,000	5,142,000
Maryland	91,000	81,000	98,000	86,000	82,000	75,000	66,000	69,000	77,000	91,000	94,000	109,000	1,019,000
Massachusetts	41,000	39,000	41,000	43,000	44,000	43,000	45,000	48,000	48,000	49,000	48,000	46,000	535,000
Michigan	149,000	137,000	155,000	151,000	154,000	148,000	148,000	146,000	140,000	117,000	147,000	159,000	1,751,000
Minnesota	42,000	42,000	45,000	41,000	43,000	41,000	42,000	42,000	41,000	43,000	45,000	51,000	518,000
New Jersey	75,000	67,000	73,000	73,000	76,000	73,000	79,000	78,000	74,000	79,000	77,000	80,000	904,000
New York	186,000	171,000	195,000	191,000	178,000	171,000	174,000	156,000	156,000	192,000	220,000	229,000	2,219,000
Ohio	620,000	552,000	596,000	556,000	563,000	546,000	560,000	588,000	600,000	626,000	638,000	660,000	7,105,000
Pennsylvania	857,000	766,000	829,000	790,000	781,000	771,000	769,000	771,000	798,000	860,000	903,000	958,000	9,853,000
Tennessee	7,000	7,000	7,000	7,000	6,000	6,000	7,000	7,000	6,000	8,000	10,000	11,000	89,000
Utah	13,000	12,000	14,000	14,000	15,000	13,000	14,000	14,000	14,000	15,000	15,000	15,000	168,000
Washington	4,000	3,000	4,000	3,000	4,000	3,000	4,000	4,000	3,000	3,000	3,000	3,000	41,000
West Virginia	83,000	78,000	87,000	88,000	85,000	83,000	86,000	89,000	92,000	96,000	92,000	97,000	1,056,000
Kentucky, Missouri, Rhode Island, and Wisconsin	111,000	106,000	122,000	107,000	110,000	110,000	116,000	125,000	124,000	130,000	131,000	136,000	1,428,000
	3,404,000	3,118,000	3,449,000	3,308,000	3,280,000	3,151,000	3,167,000	3,159,000	3,178,000	3,395,000	3,550,000	3,753,000	39,912,000

[1] Based upon reports from all producers.

PRODUCTION BY FURNACE AND NONFURNACE OVENS

TABLE 11.—*Number and production of by-product coke plants connected with iron furnaces and by all other plants, 1913–1925* [1]

Year	Number of active plants		Coke produced (net tons)		Percentage of production	
	Furnace plants	Other plants	Furnace plants	Other plants	Furnace plants	Other plants
1913	21	15	9,346,855	3,367,845	73.5	26.5
1914	23	14	8,029,727	3,190,216	71.6	28.4
1915	24	16	10,448,015	3,624,880	74.2	25.8
1916	29	17	14,446,576	4,622,785	75.8	24.2
1917	33	19	17,321,145	5,118,135	77.2	22.8
1918	39	21	20,124,218	5,873,362	77.4	22.6
1919	43	22	20,019,097	5,118,524	79.6	20.4
1920	45	23	25,212,745	5,621,206	81.8	18.2
1921	45	22	16,231,374	3,518,206	82.2	17.8
1922	43	21	23,889,702	4,660,843	83.7	16.3
1923	44	21	31,117,323	6,480,341	82.8	17.2
1924	47	24	28,165,902	5,817,666	82.9	17.1
1925	48	26	33,208,442	6,703,717	83.2	16.8

[1] For classification of individual plants as "furnace" and "other" see Table 23.

TABLE 12.—*Monthly and average daily production of by-product coke by plants associated with iron furnaces and by all other plants, 1923–1925, in net tons* [1]

	1923		1924		1925	
	Furnace plants	Other plants	Furnace plants	Other plants	Furnace plants	Other plants
Monthly production:						
January	2,573,000	529,000	2,573,000	520,000	2,888,000	516,000
February	2,360,000	502,000	2,501,000	479,000	2,611,000	507,000
March	2,695,000	563,000	2,716,000	504,000	2,890,000	559,000
April	2,655,000	553,000	2,527,000	482,000	2,771,000	537,000
May	2,759,000	571,000	2,259,000	548,000	2,730,000	550,000
June	2,638,000	530,000	1,969,000	456,000	2,621,000	530,000
July	2,726,000	542,000	1,925,000	444,000	2,621,000	546,000
August	2,687,000	554,000	1,956,000	489,000	2,597,000	562,000
September	2,565,000	550,000	2,099,000	446,000	2,617,900	561,000
October	2,553,000	549,000	2,414,000	485,000	2,796,000	599,000
November	2,422,000	521,000	2,452,000	474,000	2,950,000	600,000
December	2,434,000	517,000	2,775,000	491,000	3,116,000	637,000
	31,117,000	6,481,000	28,166,000	5,818,000	33,208,000	6,704,000
Average daily production:						
January	83,000	17,000	83,000	17,000	93,000	17,000
February	84,000	18,000	86,000	17,000	93,000	18,000
March	87,000	18,000	88,000	16,000	93,000	18,000
April	89,000	18,000	84,000	16,000	92,000	18,000
May	89,000	18,000	73,000	18,000	88,000	18,000
June	88,000	18,000	66,000	15,000	87,000	18,000
July	88,000	17,000	62,000	14,000	85,000	18,000
August	87,000	18,000	63,000	16,000	84,000	18,000
September	85,000	18,000	70,000	15,000	87,000	19,000
October	82,000	18,000	78,000	16,000	90,000	19,000
November	81,000	17,000	82,000	16,000	98,000	20,000
December	80,000	17,000	89,000	16,000	101,000	21,000
Average	85,000	18,000	77,000	16,000	91,000	18,000

[1] For classification of individual plants as "furnace" and "other" see Table 23.

TABLE 13.—*Percentage of total monthly output of by-product coke produced by plants associated with iron furnaces and by other plants, 1922–1925*[1]

Month	1922		1923		1924		1925	
	Furnace plants	Other plants	Furnace plants	Other plants	Furnace plants	Other plants	Furnace plants	Other plants
January	82.4	17.6	83.0	17.0	83.2	16.8	84.8	15.2
February	83.3	16.7	82.5	17.5	83.9	16.1	83.7	16.3
March	83.3	16.7	82.7	17.3	84.3	15.7	83.8	16.2
April	83.7	16.3	82.8	17.2	84.0	16.0	83.8	16.2
May	85.5	14.5	82.9	17.1	80.5	19.5	83.2	16.8
June	85.7	14.3	83.3	16.7	81.2	18.8	83.2	16.8
July	86.0	14.0	83.4	16.6	81.3	18.7	82.8	17.2
August	80.3	19.7	82.9	17.1	80.0	20.0	82.2	17.8
September	82.7	17.3	82.3	17.7	82.5	17.5	82.3	17.7
October	83.3	16.7	82.3	17.7	83.3	16.7	82.4	17.6
November	83.1	16.9	82.3	17.7	83.8	16.2	83.1	16.9
December	82.9	17.1	82.8	17.2	85.0	15.0	83.0	17.0
	83.7	16.3	82.8	17.2	82.9	17.1	83.2	16.8

[1] For classification of individual plants as "furnace" and "other" see Table 23.

PRODUCTION BY STATES AND DISTRICTS

TABLE 14.—*Coke produced in the United States, 1922–1925, in net tons*

State	1922	1923	1924	1925	Increase or decrease, 1925 from 1924
Alabama	3,799,865	4,654,075	4,541,058	4,670,481	+129,423
Colorado	484,039	647,823	735,520	644,481	−91,039
Georgia	8,832	12,556	8,081	4,925	−3,156
Illinois	1,982,906	3,187,168	2,355,474	3,011,497	+656,023
Indiana	3,995,505	5,042,614	4,272,435	5,141,940	+869,505
Kentucky	487,167	559,711	(1)	(1)	(1)
Maryland	589,893	861,668	810,118	1,019,209	+209,091
Massachusetts	407,081	554,125	397,640	535,302	+137,662
Michigan	1,142,059	1,648,773	1,770,547	1,751,118	−19,429
Minnesota	462,044	695,824	514,764	518,355	+3,591
Missouri	(1)	(1)	(1)	(1)	(1)
New Jersey	790,811	897,569	869,120	903,997	+34,877
New Mexico	87,631	(1)	83,070	(1)	(1)
New York	1,494,992	1,783,948	1,600,669	2,219,409	+618,740
Ohio	5,011,138	6,473,606	5,832,699	7,261,187	+1,428,488
Oklahoma		(1)			
Pennsylvania	13,991,892	25,624,286	16,927,437	19,427,603	+2,500,166
Rhode Island	(1)	(1)	(1)	(1)	(1)
Tennessee	113,896	304,511	207,475	216,488	+9,013
Utah	172,453	232,941	257,094	314,159	+57,065
Virginia	378,656	774,887	485,064	421,691	−63,373
Washington	31,674	69,068	71,615	79,257	+7,642
West Virginia	919,744	1,762,775	1,328,569	1,546,032	+217,463
Wisconsin	(1)	(1)	(1)	(1)	(1)
Combined States	771,734	1,189,606	1,201,156	1,579,812	+295,586
	37,124,012	56,977,534	44,269,605	51,266,943	+6,997,338

[1] Included under "Combined States."

TABLE 15.—*By-product and beehive coke produced in the United States, 1918 and 1921–1925, in net tons*

State	1918	1921	1922	1923	1924	1925
BY-PRODUCT						
Alabama	2,634,451	2,401,127	3,493,656	4,385,366	4,386,372	4,582,153
Colorado	230,663	286,755	364,678	448,243	523,405	489,657
Illinois	2,285,610	1,322,178	1,982,906	3,187,168	2,355,474	3,011,497
Indiana	3,898,215	3,091,263	3,995,505	5,042,614	4,272,435	5,141,940
Kentucky	517,749	185,383	456,645	434,116	(1)	(1)
Maryland	474,368	292,439	589,893	861,668	810,118	1,019,209
Massachusetts	556,397	294,059	407,081	554,125	397,640	535,302
Michigan	(1)	777,125	1,142,059	1,648,773	1,770,547	1,751,118
Minnesota	784,065	435,866	462,044	695,824	514,764	518,355
Missouri	(1)	(1)	(1)	(1)	(1)	(1)
New Jersey	682,148	739,768	790,811	897,569	869,120	903,997
New York	1,069,587	746,916	1,494,992	1,783,948	1,600,669	2,219,409
Ohio	5,226,334	2,966,273	4,911,670	6,323,810	5,723,074	7,105,129
Pennsylvania	4,586,981	5,303,371	7,151,912	9,185,747	8,426,155	9,853,262
Rhode Island		(1)	(1)	(1)	(1)	(1)
Tennessee	124,469	57,723	27,454	124,160	75,720	88,879
Utah					97,350	168,150
Washington	30,129	23,765	5,611	31,081	39,903	40,757
West Virginia	603,393	188,355	501,894	940,866	998,914	1,055,992
Wisconsin	(1)	(1)	(1)	(1)	(1)	(1)
Combined States	2,293,021	637,214	771,734	1,052,586	1,121,908	1,427,353
	25,997,580	19,749,580	28,550,545	37,597,664	33,983,568	39,912,159
BEEHIVE						
Alabama	1,717,721	132,912	306,209	268,709	154,686	88,328
Colorado	758,784	81,376	119,361	199,580	212,115	154,824
Georgia	22,048	6,943	8,832	12,556	8,081	4,925
Kentucky	301,036	99,442	30,522	125,595	79,248	(1)
New Mexico	597,072	(1)	87,631	(1)	83,070	(1)
Ohio	138,909	62,150	99,468	149,796	109,625	156,058
Oklahoma	(1)			(1)		
Pennsylvania	22,136,664	4,466,105	6,839,980	16,438,539	8,501,282	9,574,341
Tennessee	302,637	28,005	86,442	180,351	131,755	127,609
Utah	(1)	(1)	172,453	232,941	159,744	146,009
Virginia	1,234,256	280,476	378,656	774,887	485,064	421,691
Washington	93,659	3,495	26,063	37,987	31,712	38,500
West Virginia	2,716,613	209,537	417,850	821,909	329,655	490,040
Combined States	461,393	167,601		137,020		152,459
	30,480,792	5,538,042	8,573,467	19,379,870	10,286,037	11,354,784

[1] Included under "Combined States."

TABLE 16.—*Rank of the States in the production of coke, 1921–1925*

State	1921		1922		1923		1924		1925	
	All coke	By-product coke	All coke	By-product coke	All coke	By-product coke	All coke	By-product coke	All coke	By-product coke
Pennsylvania	1	1	1	1	1	1	1	1	1	1
Ohio	3	3	2	2	2	2	2	2	2	2
Indiana	2	2	3	3	3	3	4	4	3	3
Alabama	4	4	4	4	4	4	3	3	4	4
Illinois	5	5	5	5	5	5	5	5	5	5
New York	7	7	6	6	6	6	7	7	6	6
Michigan	6	6	7	7	8	7	6	6	7	7
West Virginia	10	15	8	10	7	8	8	8	8	
Maryland	14	12	10	9	10	10	10	10	9	9
New Jersey	8	8	9	8	9	9	9	9	10	10
Colorado	11	13	12	15	13	14	11	11	11	15
Kentucky	15	16	11	12	15	15	16	15	12	14
Wisconsin	12	10	14	13	14	12	14	13	13	11
Massachusetts	13	11	15	14	16	13	15	14	14	12
Minnesota	9	9	13	11	12	11	12	12	15	13
Virginia	16		16		11		13		16	
Utah	18		18		19		17	18	17	17
Missouri	17	14	17	16	18	16	18	16	18	16
Tennessee	20	18	20	18	17	18	19	19	19	19
Rhode Island	19	17	19	17	20	17	20	17	20	18
Washington	21	19	22	19	22	19	22	20	21	20
New Mexico	22		21		21		21		22	
Georgia	23		23		23		23		23	
Oklahoma					24					

TABLE 17.—*By-product and beehive coke produced in Pennsylvania, 1924–25, by districts*

District	Plants	Ovens		Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens	
		Built	Under construction				Total	Per ton
1924								
By-product:								
Eastern Pennsylvania [1]	4	804	25	2,553,859	70.1	1,790,175	$11,143,168	$6.22
Western Pennsylvania [2]	7	2,616	-------	10,001,709	66.3	6,635,980	23,531,344	3.55
	11	3,420	25	12,555,568	67.1	8,426,155	34,674,512	4.12
Beehive:								
Allegheny Mountain and Allegheny Valley	6	598	-------	147,596	65.2	96,190	505,972	5.26
Connellsville	63	15,256	-------	5,484,692	66.3	3,638,895	17,186,869	4.72
Lower Connellsville	53	12,258	-------	4,788,835	66.2	3,167,880	12,086,645	3.82
Pittsburgh	5	2,345	-------	1,071,509	59.5	637,934	3,010,853	4.72
Upper Connellsville	12	1,674	-------	470,320	63.7	299,740	1,427,602	4.76
Other districts [3]	13	3,899	-------	1,026,696	64.3	660,643	3,675,643	5.56
	152	36,030	-------	12,989,648	65.4	8,501,282	37,893,584	4.46
Grand total	163	39,450	25	25,545,216	66.3	16,927,437	72,568,096	4.29
1925								
By-product:								
Eastern Pennsylvania [1]	5	829	-------	2,783,259	72.2	2,010,873	11,077,777	5.51
Western Pennsylvania [2]	7	2,391	60	11,896,577	65.9	7,842,389	23,441,086	2.99
	12	3,220	60	14,679,836	67.1	9,853,262	34,518,863	3.50
Beehive:								
Allegheny Mountain and Allegheny Valley	7	680	-------	164,891	66.1	108,994	549,170	5.04
Connellsville	62	15,333	-------	6,470,819	66.3	4,291,429	19,525,302	4.55
Lower Connellsville	54	11,552	-------	5,058,370	66.7	3,372,377	13,568,195	4.02
Pittsburgh	5	1,552	-------	1,271,731	60.3	766,645	3,450,073	4.50
Upper Connellsville	12	1,652	-------	601,664	63.1	379,546	1,845,060	4.86
Other districts [3]	13	3,899	-------	1,004,807	65.2	655,350	2,937,815	4.48
	153	34,668	-------	14,572,282	65.7	9,574,341	41,875,615	4.37
Grand total	165	37,888	60	29,252,118	66.4	19,427,603	76,394,478	3.93

[1] 1924: Includes plants at Bethlehem, Lebanon, Steelton, and Swedeland; 1925: Bethlehem, Chester, Lebanon, Steelton, and Swedeland.
[2] 1924: Includes plants at Clairton, Dunbar, Farrell, Glassport, Johnstown, Midland, and Pittsburgh; 1925: Clairton, Dunbar, Erie, Glassport, Johnstown, Midland, and Pittsburgh.
[3] Includes Bedford, Clearfield, Huntingdon, Jefferson, and parts of Indiana and Westmoreland Counties.

TABLE 18.—*By-product and beehive coke produced in West Virginia, 1924–25, by districts*

District	Plants	Ovens		Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens	
		Built	Under construction				Total	Per ton
1924								
By-product:								
Fairmont, Benwood, Follansbee, and Weirton	4	[1] 311	-------	1,484,951	67.3	998,914	$4,402,186	$4.41
Beehive:								
Flat Top	12	1,989	-------	127,168	61.6	78,396	321,828	4.11
Tug River	1	2,137	-------					
Kanawha	4	583	-------	46,469	63.5	29,504	139,590	4.73
New River	10	1,146	-------	186,247	59.5	110,765	815,955	7.37
Upper Monongahela and Panhandle	18	1,548	-------	150,780	62.4	94,100	305,779	3.25
Upper Potomac and Tygarts Valley	6	607	-------	24,048	70.2	16,890	63,300	3.75
	51	8,010	-------	534,712	61.7	329,655	1,646,452	4.99
Grand total	55	8,321	-------	2,019,663	65.8	1,328,569	6,048,638	4.55
1925								
By-product:								
Fairmont, Benwood, Follansbee, and Weirton	4	[1] 311	-------	1,526,820	69.2	1,055,992	4,479,866	4.24
Beehive:								
Flat Top	12	1,938	-------	297,403	58.4	173,734	706,446	4.07
Tug River	1	1,885	-------					
Kanawha	4	583	-------	120,847	60.7	73,406	264,594	3.60
New River	10	1,046	-------	181,763	63.2	114,856	667,242	5.81
Upper Monongahela and Panhandle	18	1,544	-------	171,826	61.8	106,251	439,147	4.13
Upper Potomac and Tygarts Valley	7	851	-------	32,216	67.6	21,793	91,450	4.20
	52	7,847	-------	804,055	60.9	490,040	2,168,879	4.43
Grand total	56	8,158	-------	2,330,875	66.3	1,546,032	6,648,745	4.30

[1] 191 Koppers and 120 Semet-Solvay ovens.

TABLE 19.—*By-product and beehive coke produced in Ohio, 1924–25, by districts*

District	Plants	Ovens		Coal used (net tons)	Yield of coke from coal (per cent)	Coke produced (net tons)	Value of coke at ovens	
		Built	Under construction				Total	Per ton
1924								
By-product:								
Canton and Cleveland	4	531	-------	2,876,552	69.2	1,990,222	$11,697,913	$5.88
Youngstown	3	594	-------	2,791,061	66.1	1,845,635	9,050,821	4.90
Other districts [1]	7	564	-------	2,755,147	68.5	1,887,217	10,259,475	5.44
	14	1,689	-------	8,422,760	67.9	5,723,074	31,008,209	5.42
Beehive	2	205	-------	168,648	65.0	109,625	[2]	[2]
Grand total	16	1,894	-------	8,591,408	67.9	5,832,699	[2]	[2]
1925								
By-product:								
Canton and Cleveland	4	531	-------	3,313,194	70.2	2,325,592	12,336,557	5.30
Youngstown	3	594	-------	3,366,145	66.4	2,236,350	9,721,290	4.35
Other districts [1]	7	564	-------	3,656,729	69.5	2,543,187	12,132,844	4.77
	14	1,689	-------	10,336,068	68.7	7,105,129	34,190,691	4.81
Beehive	2	204	-------	240,828	64.8	156,058	[2]	[2]
Grand total	16	1,893	-------	10,576,896	68.7	7,261,187	[2]	[2]

[1] Includes plants at Dover, Ironton, Lorain, Painesville, Portsmouth, Toledo, and Warren.
[2] Not at liberty to publish.

NUMBER AND TYPE OF OVENS

TABLE 20.—*By-product coke ovens built and under construction in the United States at end of each year, 1922–1925*

State	1922		1923		1924		1925	
	Built	Under construction	Built	Under construction	Built	Under construction	Built	Under construction
Alabama	1,196		1,196		1,196	25	1,276	
Colorado	120		120		120		120	
Illinois	899		899		739	110	849	
Indiana	1,213		1,213		1,133	19	1,177	212
Kentucky	108		108		108		108	
Maryland	300		300		300		300	
Massachusetts	400		400		400	11	419	
Michigan	390		390	32	420	2	420	2
Minnesota	220		220		220		220	
Missouri	64		64		64		64	
New Jersey	252		252		202		206	
New York	692		598	114	686	55	506	155
Ohio	1,558		1,619	84	1,689		1,689	
Pennsylvania	3,154	366	3,094	366	3,420	25	3,220	60
Rhode Island	40		40		40		40	
Tennessee	24		24		24		24	
Utah				33	33		33	
Washington	20		20		20		20	
West Virginia	274	37	311		311		311	
Wisconsin	288		288		288		288	
	11,212	403	11,156	629	11,413	247	11,290	429

TABLE 21.—*Beehive coke ovens in the United States at the end of each year, 1920–1925*

State	1920	1921	1922	1923	1924	1925	
						Built	Under construction
Alabama	8,482	6,717	6,460	6,199	6,199	4,961	
Colorado	1,793	1,758	1,758	1,758	1,696	1,681	
Georgia	151	151	151	151	151	151	
Kentucky	855	855	795	795	795	795	
New Mexico	1,030	1,030	1,030	1,030	1,030	1,030	
Ohio	222	205	205	205	205	204	
Oklahoma	300	300	300	300	300	300	
Pennsylvania	44,569	39,806	38,593	37,578	36,030	34,608	
Tennessee	1,848	1,848	1,822	1,767	1,555	1,675	
Utah	819	819	819	819	819	819	
Virginia	3,906	3,474	3,372	3,284	3,234	3,124	
Washington	407	408	408	408	408	332	
West Virginia	10,916	8,643	8,245	8,055	8,010	7,847	
	75,298	66,014	63,958	62,349	60,432	57,587	

TABLE 22.—*Coke ovens completed and abandoned and total number in existence and under construction at the end of 1925*

State	Plants in existence	Ovens						
		New[1]		Abandoned during year	In existence Dec. 31		Under construction Dec. 31	
		Number	Capacity per day (net tons of coke)		Number	Capacity per day (net tons of coke)	Number	Capacity per day (net tons of coke)
BY-PRODUCT								
Alabama	8	82	1,390	2	1,276	14,450		
Colorado	1				120	1,680		
Illinois	7	110	2,200		849	11,264		
Indiana	7	44	321		1,177	14,854	212	3,301
Kentucky	1				108	1,694		
Maryland	1				300	4,200		
Massachusetts	2	19	104		419	1,854		
Michigan	5				420	5,406	2	850
Minnesota	3				220	2,413		
Missouri	1				64	813		
New Jersey	2	5	30		206	2,231		
New York	6	55	1,000	235	506	7,145	155	1,960
Ohio	14				1,689	21,020		
Pennsylvania	12	62	800	262	3,220	35,190	60	710
Rhode Island	1				40	510		
Tennessee	1				24	336		
Utah	1				33	560		
Washington	1				20	109		
West Virginia	4				311	3,181		
Wisconsin	2				288	3,100		
	80	377	5,845	499	11,290	132,010	429	6,821
BEEHIVE								
Alabama	18			1,358	4,961			
Colorado	6			15	1,681			
Georgia	1				151			
Kentucky	4				795			
New Mexico	3				1,030			
Ohio	2			1	204			
Oklahoma	2				300	[2]		
Pennsylvania	152			1,104	34,668			
Tennessee	9				1,675			
Utah	1				819			
Virginia	13			100	3,124			
Washington	4			71	332			
West Virginia	52			261	7,847			
	267			2,910	57,587	[2]		

[1] Represents new construction. Does not include ovens repaired and put into commission.
[2] Data not available.

TABLE 23.—*By-product coke plants in the United States, December 31, 1925*

State	Town	Name of company owning plant	Type of plant[1]	Number of ovens	Type of oven	Year put in operation[2]
Alabama	Alabama City	Gulf States Steel Co	F	37	Koppers	1917
	Ensley	Semet-Solvay Co	F	240	Semet-Solvay	1898–1902
	Fairfield	Tennessee Coal, Iron & R. R. Co.	F	434	Koppers	1912–1920
	North Birmingham.	Sloss-Sheffield Steel & Iron Co.	F	120	Semet-Solvay	1920
	Tarrant	Alabama By-Products Corp.	M	100	Koppers	1920–1925
	Thomas	Republic Iron & Steel Co	F	57	do	1925
	Tuscaloosa	Central Iron & Coal Co	F	60	Semet-Solvay	1906–1914
	Woodward	Woodward Iron Co	F	168	Koppers	1911–1922
	do	do	F	60	Wilputte	1917
Colorado	Pueblo	Colorado Fuel & Iron Co	F	120	Koppers	1918
Illinois	Chicago	Chicago By-Product Coke Co.	M	105	do	1921–22
	Granite City	St. Louis Coke & Iron Co	F	80	Roberts	1921
	Joliet	Illinois Steel Co	F	280	Koppers	1908–9
	Lockport	Coal Products Manufacturing Co.	M	18	Wilputte	1914
	do	do	M	35	Koppers	1912
	South Chicago	By-Products Coke Corp	M	120	Semet-Solvay	1905–1915
	do	do	M	110	Koppers	1925
	do	International Harvester Co.	F	88	Wilputte	1919
	Waukegan	North Shore Gas Co	M	13	Semet-Solvay	1912
Indiana	Fort Wayne	Northern Indiana Gas & Elec. Co.	M	19	Koppers	1925
	Gary	Illinois Steel Co	F	700	do	1911–1918
	Indiana Harbor.	Inland Steel Co	F	130	do	1913–1917
	do	Youngstown Sheet & Tube Co.	F	120	Semet-Solvay	1919
	Indianapolis	Citizens Gas Co	M	75	United-Otto	1909–1925
	do	do	M	41	Semet-Solvay	1914
	do	do	M	40	Wilputte	1919
	Muncie	Central Indiana Gas Co	M	22	Klönne	1912
	Terre Haute	Indiana Coke & Gas Co	M	30	Koppers	1919
Kentucky	Ashland	Ashland By-Product Coke Co.	F	108	Semet-Solvay	1913–1916
Maryland	Sparrows Point	Bethlehem Steel Co	F	300	Koppers	1914–1919
Massachusetts	Everett	New England Fuel & Transportation Co.	M	400	United-Otto	1899
	Lynn	Lynn Gas & Elec. Co	M	19	Koppers	1925
Michigan	Battle Creek	Battle Creek Gas Co	M	11	do	1924
	Dearborn	Ford Motor Co	F	120	Semet-Solvay	1919
	Detroit	Solvay Process Co	M	216	do	1901–1917
	Wyandotte	Michigan Alkali Co	M	54	United-Otto	1902–1916
	Zilwaukee	Consumers Power Co	M	19	Koppers	1924
Minnesota	Duluth	Minnesota Steel Co	F	90	do	1915–16
	St. Paul	Minnesota By-Product Coke Co.	M	65	do	1918
	West Duluth	Zenith Furnace Co	F	65	United-Otto	1904–1916
Missouri	St. Louis	Laclede Gas Light Co	M	56	Koppers	1915
	do	do	M	8	Plette	1921
New Jersey	Camden	Camden Coke Co	M	37	Koppers	1921
	Kearny	Seaboard By-Product Coke Co.	M	169	do	1917–1925
New York	Buffalo	Donner-Hanna Coke Corp	F	150	do	1920
	do	Wickwire Spencer Steel Corp.	F	60	Semet-Solvay	1917
	Geneva	Empire Gas & Electric Co.	M	46	do	1904–1909
	Lackawanna	Bethlehem Steel Co	F	60	do	1920
	do	do	F	114	Koppers	1924
	Troy	Hudson Valley Coke & Products Corp.	F	55	American	1925
	Utica	Utica Gas & Electric Co	M	21	Koppers	1924

[1] F, "Furnace plants," or plants associated with iron furnaces and steel works. M, "Nonfurnace plants" or "other plants" (see Tables 11–13), including merchant plants, plants associated with industries other than iron and steel, and plants supplying gas under contract for city use.

[2] The first and last years are given for those plants that have two or more installations.

TABLE 23.—*By-product coke plants in the United States, December 31, 1925*—Continued

State	Town	Name of company owning plant	Type of plant	Number of ovens	Type of oven	Year put in operation
Ohio	Canton	United Alloy Steel Corp	F	47	Koppers	1916
	Cleveland	American Steel & Wire Co.	F	180	do	1918
	do	McKinney Steel Co	F	204	do	1916
	do	Otis Steel Co	F	100	Semet-Solvay	1910-1915
	Dover	Hanna Furnace Co	F	24	Roberts	1916
	East Youngstown.	Youngstown Sheet & Tube Co.	F	306	Koppers	1916-1918
	Ironton	Ironton By-Product Coke Co.	F	60	Semet-Solvay	1918
	Lorain	National Tube Co	F	208	Koppers	1918
	Painesville	Diamond Alkali Co	F	23	do	1924
	Portsmouth	Portsmouth By-Product Coke Co.	F	108	Semet-Solvay	1917
	Toledo	Toledo Furnace Co	F	94	Koppers	1916
	Warren	Trumbull-Cliffs Furnace Co.	F	47	do	1924
	Youngstown	Republic Iron & Steel Co	F	204	do	1914-1923
	do	Youngstown Sheet & Tube Co.	F	84	do	1917
Pennsylvania	Bethlehem	Bethlehem Steel Co	F	424	do	1915-16
	Chester	Philadelphia Suburban Gas & Electric Co.	M	25	Morrissey	1925
	Clairton	Carnegie Steel Co	F	1,134	Koppers	1918-1924
	Dunbar	American Manganese Manufacturing Co.	F	60	Semet-Solvay	1896-1903
	Erie	Perry Iron Co	F	37	Wilputte	1925
	Glassport	Allegheny By-Product Coke Co.	M	120	United-Otto	1897
	Johnstown	Bethlehem Steel Co	F	150	Otto-Hoffman	1895-1907
	do	do	F	92	Koppers	1915
	do	do	F	310	Cambria	1918-1921
	do	do	F	88	Semet-Solvay	1921
	Lebanon	do	F	90	do	1904-1921
	Midland	Pittsburgh Crucible Steel Co.	F	100	Koppers	1920
	Pittsburgh	Jones & Laughlin Steel Co.	F	300	do	1919-20
	Steelton	Bethlehem Steel Co	F	120	Semet-Solvay	1907
	do	do	F	60	Koppers	1918
	Swedeland	Rainey-Wood Coke Co	F	110	do	1919
Rhode Island	Providence	Providence Gas Co	M	40	do	1919
Tennessee	Altonpark	Chattanooga Coke & Gas Co.	M	24	Semet-Solvay	1915
Utah	Provo	Columbia Steel Corp	F	33	Koppers	1924
Washington	Seattle	Seattle Lighting Co	M	20	Klönne	1914
West Virginia	Benwood	National Tube Co	F	120	Semet-Solvay	1898-1901
	Fairmont	Domestic Coke Corp	M	60	Koppers	1920
	Follansbee	Wheeling Steel Corp	F	94	do	1917
	Weirton	Weirton Steel Co	F	37	do	1923
Wisconsin	Mayville	Youngstown Sheet & Tube Co.	F	108	Otto-Hoffman	1914-1917
	Milwaukee	Milwaukee Coke & Gas Co.	M	80	Semet-Solvay	1901-1906
	do	do	M	100	Koppers	1921-22

TABLE 24.—*By-product ovens under construction in the United States, December 31, 1925*

State	Town	Name of company owning plant	Number of ovens	Type of oven	Date of operation
Indiana	Gary	Illinois Steel Co	138	Koppers	March-April, 1926.
	Indiana Harbor	Inland Steel Co	74	do	June, 1926.
Michigan	Dearborn	Ford Motor Co	2	Piron	
New York	Utica	Utica Gas & Electric Co	21	Koppers	November, 1926.
	Rochester	Rochester Gas & Electric Co	60	do	March-September, 1926.
	Hunts Point	Consolidated Gas Co	74	do	November, 1926.
Pennsylvania	Pittsburgh	Jones & Laughlin Steel Co	60	Wilputte	April, 1926.

TABLE 25.—*By-product ovens of each type in the United States at the end of the year in 1924 and 1925*

State	Koppers [1]	Semet-Solvay	United Otto [2]	Cambria-Belgian	Wilputte	Rothberg	Roberts	American	Klönne	Morrisey	Piette	Total
1924												
Alabama	716	420			60							1,196
Colorado	120											120
Illinois	420	133			106		80					739
Indiana	860	161	50		40				22			1,133
Kentucky		108										108
Maryland	300											300
Massachusetts			400									400
Michigan	30	336	54									420
Minnesota	155		65									220
Missouri	56										8	64
New Jersey	202											202
New York	285	166				235						686
Ohio	1,397	268					24					1,689
Pennsylvania	2,220	408	482	310								3,420
Rhode Island	40											40
Tennessee		24										24
Utah	33											33
Washington									20			20
West Virginia	191	120										311
Wisconsin	100	80	108									288
	7,125	2,224	1,159	310	206	235	104		42		8	11,413
1925												
Alabama	796	420			60							1,276
Colorado	120											120
Illinois	536	133			106		80					849
Indiana	879	161	75		40				22			1,177
Kentucky		108										108
Maryland	300											300
Massachusetts	19		400									419
Michigan	30	336	54									420
Minnesota	155		65									220
Missouri	56										8	64
New Jersey	206											206
New York	285	166						55				506
Ohio	1,397	268					24					1,689
Pennsylvania	2,220	358	270	310	37					25		3,220
Rhode Island	40											40
Tennessee		24										24
Utah	33											33
Washington									20			20
West Virginia	191	120										311
Wisconsin	100	80	108									288
	7,357	2,174	972	310	243		104	55	42	25	8	11,290

[1] Includes the Koppers-Becker type. [2] Includes the Otto-Hoffman and Schniewind types.

CAPACITY OF BY-PRODUCT OVENS

TABLE 26.—*Estimated annual potential production of coke and coal required for charge of by-product coke ovens in the United States, 1923–1925, when operated at different percentages of maximum capacity, in millions of net tons*

Percentage of maximum capacity	1923				1924				1925			
	Ovens completed Dec. 31		Including ovens under construction		Ovens completed Dec. 31		Including ovens under construction		Ovens completed Dec. 31		Including ovens under construction	
	Coke	Coal [1]	Coke	Coal [1]	Coke	Coal [1]	Coke	Coal [1]	Coke	Coal [1]	Coke	Coal [1]
100	45.1	64.4	48.7	69.6	46.3	66.1	47.9	68.4	48.2	68.8	50.7	72.4
90	40.6	58.0	43.8	62.6	41.7	59.5	43.1	61.6	43.4	61.9	45.6	65.2
85	38.3	54.7	41.4	59.2	39.4	56.2	40.7	58.1	41.0	58.5	43.1	61.5
75	33.8	48.3	36.5	52.2	34.7	49.6	35.9	51.3	36.2	51.6	38.0	54.3
50	22.6	32.2	24.4	34.8	23.2	33.1	24.0	34.2	24.1	34.4	25.4	36.2

[1] Coal for charge estimated on basis of 70 per cent yield in coke.

TABLE 27.—*Percentage of maximum capacity produced by by-product coke operators, 1921–1925, by months*

	1921	1922	1923	1924	1925		1921	1922	1923	1924	1925
January	62.3	50.4	83.2	81.4	86.0	August	37.5	48.2	86.5	61.1	77.8
February	57.3	53.4	85.0	83.8	86.0	September	39.7	62.3	85.9	65.7	86.9
March	48.6	57.4	87.2	84.8	85.7	October	45.9	75.4	82.8	71.7	82.0
April	42.7	59.2	88.7	81.4	84.9	November	48.4	81.2	81.1	74.8	88.5
May	43.4	68.1	89.1	73.1	80.9	December	49.7	82.2	80.1	80.8	90.6
June	39.4	69.2	87.6	65.3	80.3						
July	35.1	66.7	87.2	59.2	78.0	The year	45.8	64.6	85.4	73.4	83.5

QUANTITY AND COST OF COAL CHARGED

In response to several requests the following table has been compiled to place on record the quantity of coal consumed in coke ovens in each year since the beginning of the statistical record. For much of the period shown separate figures for beehive and by-product ovens have hitherto not been available.

TABLE 28.—*Coal used in manufacture of coke in the United States, 1880–1925*

[Net tons]

Year	By-product	Beehive	Total	Year	By-product	Beehive	Total
1880		5,237,741	5,237,741	1903	[2] 2,519,938	[2] 36,903,587	39,423,525
1881		6,546,662	6,546,662	1904	[2] 3,491,605	[2] 33,040,003	36,531,608
1882		7,577,648	7,577,648	1905	[2] 4,635,064	[2] 44,895,673	49,530,677
1883		8,516,670	8,516,670	1906	[2] 6,101,910	[2] 49,644,464	55,746,374
1884		7,951,974	7,951,974	1907	7,506,174	54,439,935	61,946,109
1885		8,071,126	8,071,126	1908	5,699,058	33,741,779	39,440,837
1886		10,688,972	10,688,972	1909	8,390,129	50,964,808	59,354,937
1887		11,859,752	11,859,752	1910	9,529,042	53,559,285	63,088,327
1888		12,945,350	12,945,350	1911	10,446,584	42,831,664	53,278,248
1889		15,960,973	15,960,973	1912	14,767,543	50,810,319	65,577,862
1890		18,005,209	18,005,209	1913	17,095,369	52,143,821	69,239,190
1891		16,344,540	16,344,540	1914	15,500,021	36,123,729	51,623,750
1892		18,813,337	18,813,337	1915	19,554,382	42,278,516	61,832,898
1893	15,150	14,901,996	14,917,146	1916	26,524,502	55,084,958	81,609,460
1894	[1] 22,088	14,348,750	14,370,838	1917	31,505,759	52,246,612	83,752,371
1895	[2] 24,794	[2] 20,823,529	20,848,323	1918	36,867,721	48,160,297	85,028,018
1896	[2] 111,162	[2] 18,583,260	18,694,422	1919	35,857,419	29,730,499	65,587,918
1897	[2] 350,618	[2] 20,556,701	20,907,319	1920	44,204,996	31,985,836	76,190,832
1898	[2] 394,170	[2] 24,855,400	25,249,570	1921	28,713,111	8,475,446	37,188,557
1899	[2] 1,213,570	[2] 29,005,773	30,219,343	1922	41,052,670	13,285,868	54,338,538
1900	[2] 1,440,063	[2] 30,673,480	32,113,543	1923	54,275,577	30,084,366	84,359,943
1901	[2] 1,579,518	[2] 32,628,447	34,207,965	1924	49,061,339	15,914,310	64,975,649
1902	[2] 1,878,966	[2] 37,725,041	39,604,007	1925	57,109,651	17,422,581	74,532,232

[1] Estimated from the coke produced; assumed yield 74.7 per cent

[2] From 1895 to 1906 the record of coal consumed was not compiled separately for by-product and beehive coke. The recorded total is here apportioned between the two by computing the coal required to make the by-product coke produced, assuming a yield of 74.7 per cent, deducting this from the total, and counting the remainder as made into beehive coke.

TABLE 29.—*Total quantity and value at ovens of coal used in the manufacture of coke in the United States, 1924 and 1925, by States*

State	Coal used (net tons)	Cost of coal		Coal per ton of coke	
		Total	Per ton of coal	Net tons	Cost
1924					
BY-PRODUCT PLANTS					
Alabama	6,375,171	$18,172,290	$2.85	1.45	$4.13
Colorado	754,790	(1)	(1)	1.44	
Illinois	3,397,248	17,513,155	5.16	1.44	7.43
Indiana	5,828,314	30,503,110	5.23	1.36	7.11
Maryland	1,103,984	(1)	(1)	1.36	
Massachusetts	574,632	(1)	(1)	1.45	
Michigan	2,408,925	12,863,772	5.34	1.36	7.26
Minnesota	744,567	4,385,629	5.89	1.45	8.54
New Jersey	1,202,732	(1)	(1)	1.38	
New York	2,265,062	10,761,218	4.75	1.42	6.75
Ohio	8,422,760	34,051,160	4.04	1.47	5.94
Pennsylvania	12,555,568	40,037,692	3.19	1.49	4.75
Tennessee	103,314	343,669	3.33	1.36	4.53
Utah	190,035	(1)	(1)	1.95	
Washington	70,968	382,303	5.39	1.78	9.59
West Virginia	1,484,951	5,671,284	3.82	1.49	5.69
Kentucky, Missouri, Rhode Island, and Wisconsin	1,578,318	7,675,331	4.86	1.41	6.85
Undistributed		20,068,184	5.24		
	49,061,339	202,428,797	4.13	1.44	5.95
BEEHIVE PLANTS					
Alabama	256,240	670,800	2.62	1.66	4.35
Colorado	330,226	(1)	(1)	1.56	
Georgia	14,400	44,259	3.07	1.78	5.46
Kentucky	146,794	(1)	(1)	1.85	
New Mexico	136,212	(1)	(1)	1.64	
Ohio	168,648	(1)	(1)	1.54	
Pennsylvania	12,989,648	27,578,841	2.12	1.53	3.24
Tennessee	249,293	565,390	2.27	1.88	4.27
Utah	268,808	873,626	3.25	1.68	5.46
Virginia	769,990	1,758,763	2.28	1.59	3.63
Washington	49,339	237,725	4.82	1.56	7.52
West Virginia	534,712	981,951	1.84	1.62	2.98
Undistributed		2,652,253	3.39		
	15,914,310	35,363,608	2.22	1.55	3.44
1925					
BY-PRODUCT PLANTS					
Alabama	6,516,689	17,487,682	2.68	1.42	3.81
Colorado	706,948	(1)	(1)	1.44	
Illinois	4,224,420	20,646,693	4.89	1.40	6.85
Indiana	6,866,855	34,561,328	5.03	1.34	6.74
Maryland	1,383,344	(1)	(1)	1.36	
Massachusetts	797,699	(1)	(1)	1.49	
Michigan	2,450,275	11,666,464	4.76	1.40	6.66
Minnesota	791,992	4,223,388	5.33	1.53	8.15
New Jersey	1,242,275	(1)	(1)	1.37	
New York	3,074,465	13,857,369	4.51	1.39	6.27
Ohio	10,336,068	39,454,515	3.82	1.46	5.58
Pennsylvania	14,679,836	43,615,257	2.97	1.49	4.43
Tennessee	125,860	377,435	3.00	1.42	4.26
Utah	316,285	(1)	(1)	1.88	
Washington	68,655	365,341	5.32	1.69	8.99
West Virginia	1,526,820	4,675,277	3.06	1.45	4.44
Kentucky, Missouri, Rhode Island, and Wisconsin	2,001,165	8,313,754	4.15	1.40	5.81
Undistributed		20,959,900	4.71		
	57,109,651	220,204,403	3.86	1.43	5.52
BEEHIVE PLANTS					
Alabama	137,106	364,318	2.66	1.55	4.12
Colorado	239,004	(1)	(1)	1.54	
Georgia	8,651	27,934	3.23	1.76	5.68
Ohio	240,828	(1)	(1)	1.54	
Pennsylvania	14,572,282	28,954,447	1.99	1.52	3.02
Tennessee	200,373	537,013	2.68	1.57	4.21
Utah	247,473	806,287	3.26	1.69	5.51
Virginia	661,193	1,211,064	1.83	1.57	2.87
Washington	62,644	293,188	4.68	1.63	7.63
West Virginia	804,055	1,314,847	1.63	1.64	2.67
Kentucky and New Mexico	248,972	693,712	2.79	1.63	4.55
Undistributed		1,574,940	3.28		
	17,422,581	35,777,750	2.05	1.53	3.14

[1] Included under "Undistributed."

TABLE 30.—*Average cost per net ton of coal charged into by-product coke ovens, 1916–1925*

State	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Alabama	$1.89	$2.54	$3.29	$3.35	$4.10	$3.29	$2.47	$2.95	$2.85	$2.68
Illinois	2.93	3.81	4.63	4.73	6.49	5.90	5.92	5.78	5.16	4.89
Indiana	3.05	3.87	4.50	4.63	5.92	5.89	5.70	5.77	5.23	5.03
Kentucky	1.52	2.55	3.34	3.40	4.84	4.20	4.28	(1)	(1)	(1)
Michigan	2.48	3.63	4.51	4.60	7.03	5.77	5.65	5.79	5.34	4.76
Minnesota	2.94	4.01	5.31	4.33	6.50	7.12	6.79	6.74	5.89	5.33
New York	2.73	4.33	4.46	4.34	6.20	5.86	5.60	5.31	4.75	4.51
Ohio	2.56	4.36	3.98	3.85	5.75	4.94	5.04	4.84	4.04	3.82
Pennsylvania	2.47	3.29	3.74	2.99	3.91	3.39	3.78	3.77	3.19	2.97
Tennessee	1.66	2.08	3.59	3.64	4.30	3.84	3.84	3.50	3.33	3.00
Washington	3.38	3.87	5.72	5.89	6.63	6.53	5.50	5.44	5.39	5.32
West Virginia	2.00	3.30	3.57	3.18	4.82	3.89	4.07	4.03	3.82	3.06
Average cost of coal per ton of coke	2.60	3.70	4.23	3.96	5.40	4.84	4.73	4.76	4.13	3.86
	3.62	5.20	6.00	5.65	7.73	7.03	6.81	6.85	5.95	5.52

[1] Not at liberty to publish.

TABLE 31.—*Cost of coal and value of all products per net ton of coke produced, 1913–1925*

[All figures reduced to value per net ton of coke produced]

Year	By-product coke					Beehive coke		
		Per ton of coke					Per ton of coke	
	Value of coke per ton [1]	Value of all by-products	Total value of products	Cost of coal	Excess, products over coal	Value of coke per ton [1]	Cost of coal	Excess, coke over coal
1913	$3.82	$1.41	$5.23	$3.27	$1.96	$2.39	$1.75	$0.64
1914	3.39	1.65	5.04	3.19	1.85	2.15	1.67	.48
1915	3.45	2.19	5.64	3.24	2.40	2.07	1.61	.46
1916	3.95	3.25	7.20	3.62	3.58	2.69	1.96	.73
1917	6.18	3.01	9.19	5.20	3.99	4.81	3.17	1.64
1918	7.42	3.07	10.49	6.00	4.49	6.21	3.65	2.56
1919	6.37	2.72	9.09	5.65	3.44	5.15	3.39	1.76
1920	10.15	3.40	13.55	7.73	5.82	7.94	4.90	3.04
1921	5.95	3.46	9.41	7.03	2.38	5.45	3.82	1.63
1922	6.59	3.32	9.91	6.81	3.10	5.84	4.05	1.79
1923	6.85	3.48	10.33	6.85	3.48	5.98	3.97	2.01
1924	5.76	3.51	9.27	5.95	3.32	4.70	3.44	1.26
1925	5.28	3.58	8.86	5.52	3.34	5.12	3.14	1.98

[1] Includes operators' statements of the value of coke consumed by them in associated enterprises but not sold, except that in 1918 and 1920 the value of such coke was estimated for each State at the average value for that State of the part of the product reported sold.

PREPARATION AND SOURCE OF COAL CHARGED

TABLE 32.—*Coal used in the manufacture of by-product and beehive coke in the United States, 1922–1925, in net tons*

State	1922	1923	1924	1925		
				Unwashed	Washed	Total
By-product ovens:						
Alabama	5,115,981	6,408,843	6,375,171	129,437	6,387,252	6,516,689
Colorado	528,956	653,139	754,790		706,948	706,948
Illinois	2,876,987	4,589,863	3,397,248	4,224,420		4,224,420
Indiana	5,509,297	7,143,914	5,828,314	6,866,855		6,866,855
Kentucky	629,012	582,385	(1)	(1)		(1)
Maryland	799,630	1,173,062	1,103,984	1,383,344		1,383,344
Massachusetts	606,589	797,833	574,632	797,699		797,699
Michigan	1,578,357	2,286,754	2,408,925	2,397,417	52,858	2,450,275
Minnesota	688,007	999,924	744,567	791,992		791,992
Missouri	(1)	(1)	(1)	(1)		(1)
New Jersey	1,084,781	1,207,605	1,202,732	1,242,275		1,242,275
New York	2,208,162	2,607,867	2,265,062	2,674,865	399,600	3,074,465
Ohio	7,133,358	9,290,435	8,422,760	10,336,068		10,336,068
Pennsylvania	10,363,792	13,407,952	12,555,568	13,403,037	1,276,799	14,679,836
Rhode Island	(1)	(1)	(1)	(1)		(1)
Tennessee	37,061	171,703	103,314	27,036	98,824	125,860
Utah			190,035	316,285		316,285
Washington	9,390	54,811	70,968		68,655	68,655
West Virginia	757,877	1,400,864	1,484,951	1,526,820		1,526,820
Wisconsin	(1)	(1)	(1)	(1)		(1)
Combined States	1,125,433	1,498,623	1,578,318	2,001,165		2,001,165
	41,052,670	54,275,577	49,061,339	48,118,715	8,990,936	57,109,651
Beehive ovens:						
Alabama	509,661	464,160	256,240		137,106	137,106
Colorado	183,627	306,836	330,226	18,050	220,954	239,004
Georgia	16,178	24,161	14,400	8,651		8,651
Kentucky	53,660	230,539	146,794	(1)		(1)
New Mexico	141,340	(1)	136,212		(1)	(1)
Ohio	153,034	230,455	168,648	240,828		240,828
Oklahoma		(1)				
Pennsylvania	10,416,729	25,177,492	12,989,648	12,881,831	1,690,751	14,572,282
Tennessee	174,945	330,831	249,293	1,062	199,311	200,373
Utah	299,499	403,055	268,808	247,473		247,473
Virginia	601,528	1,241,159	769,990	628,247	32,946	661,193
Washington	40,825	55,730	49,339		62,644	62,644
West Virginia	694,842	1,354,982	534,712	628,452	175,603	804,055
Combined States		264,966		127,239	121,733	248,972
	13,285,868	30,084,366	15,914,310	14,781,533	2,641,048	17,422,581

[1] Included under "Combined States."

TABLE 33.—*Coal consumed at beehive-coke plants, 1924–25, classified with respect to practice in crushing coal before charging, in net tons*

State and district	At plants practicing crushing[1]	At plants not practicing crushing	Total
1924			
Alabama	187,781	68,459	256,240
Colorado	316,175	14,051	330,226
Georgia		14,400	14,400
Kentucky	146,794		146,794
New Mexico	136,212		136,212
Ohio		168,648	168,648
Pennsylvania:			
Allegheny Mountain and Allegheny Valley district	86,754	60,842	147,596
Connellsville district	48,837	5,435,855	5,484,692
Lower Connellsville district	939,680	3,849,155	4,788,835
Pittsburgh district	958,113	113,396	1,071,509
Upper Connellsville district	360,689	109,631	470,320
Other districts	1,026,696		1,026,696
Total Pennsylvania	3,420,769	9,568,879	12,989,648
Tennessee	212,393	36,900	249,293
Utah	268,808		268,808
Virginia	716,069	53,921	769,990
Washington	40,668	8,671	49,339
West Virginia:			
Flat Top district	23,152	104,016	127,168
Kanawha district	46,469		46,469
New River district	105,595	80,652	186,247
Upper Monongahela district	129,694	21,086	150,780
Upper Potomac and Tygarts Valley district	23,488	560	24,048
Total West Virginia	328,398	206,314	534,712
Total United States	5,774,067	10,140,243	15,914,310
1925			
Alabama	66,539	70,567	137,106
Colorado	220,954	18,050	239,004
Georgia		8,651	8,651
Ohio		240,828	240,828
Pennsylvania:			
Allegheny Mountain and Allegheny Valley district	100,764	64,127	164,891
Connellsville district	64,757	6,406,062	6,470,819
Lower Connellsville district	1,048,866	4,009,504	5,058,370
Pittsburgh district	1,163,187	108,544	1,271,731
Upper Connellsville district	321,676	279,988	601,664
Other districts	1,004,807		1,004,807
Total Pennsylvania	3,704,057	10,868,225	14,572,282
Tennessee	163,671	36,702	200,373
Utah	247,473		247,473
Virginia	614,721	46,472	661,193
Washington	50,869	11,775	62,644
West Virginia:			
Flat Top district	181,565	115,838	297,403
Kanawha district	120,847		120,847
New River district	107,483	74,280	181,763
Upper Monongahela district	138,114	33,712	171,826
Upper Potomac and Tygarts Valley district	16,069	16,147	32,216
Total West Virginia	564,078	239,977	804,055
Kentucky and New Mexico	248,972		248,972
Total United States	5,881,334	11,541,247	17,422,581

[1] Includes a small number of plants that reported charging slack or screenings.

TABLE 34.—*Coal used in the manufacture of by-product coke, 1924–25, by sources, in net tons*

1924

State in which coal was used	Coal produced in—						
	Alabama	Colorado	Georgia	Illinois	Indiana	Kentucky	Ohio
Alabama	6,380,572						
Colorado		860,069					
Illinois				481,464		1,532,902	19,640
Indiana				242,921	878	1,422,930	
Massachusetts						2,769	
Michigan						1,906,041	
Minnesota						93,219	
New York						382,441	
Ohio						2,178,464	111,371
Tennessee			20,821				
West Virginia						38,954	
Kentucky, Missouri, Rhode Island, and Wisconsin						436,788	
	6,380,572	860,069	20,821	724,385	878	7,994,508	131,011

State in which coal was used	Coal produced in—							
	Pennsylvania	Tennessee	Utah	Virginia	Washington	West Virginia	Miscellaneous	Total[1]
Alabama								6,380,572
Colorado								860,069
Illinois	100,394					1,146,366		3,280,766
Indiana	261,656					3,899,929		5,828,314
Maryland	1,103,984							1,103,984
Massachusetts				224,963		346,846		574,578
Michigan	166,624					331,757		2,404,422
Minnesota	312,506					338,842		744,567
New Jersey				553,464		649,268		1,202,732
New York	1,541,809					340,812		2,265,062
Ohio	4,729,821					1,276,102		8,295,758
Pennsylvania	12,104,298					451,270		12,555,568
Tennessee		60,090					22,403	103,314
Utah			190,035					190,035
Washington					70,968			70,968
West Virginia	1,338,541					107,457		1,484,952
Kentucky, Missouri, Rhode Island, and Wisconsin	65,733			204,834		809,645	1,668	1,518,668
	21,725,366	60,090	190,035	983,261	70,968	9,698,294	24,071	48,864,329

[1] Difference between these totals and those shown in Table 2, etc., is due to change in stock, loss of weight in handling, and other factors.

TABLE 34.—*Coal used in the manufacture of by-product coke, 1924-25, by sources, in net tons*—Continued

1925

State in which coal was used	Coal produced in—							
	Alabama	Colorado	Georgia	Illinois	Indiana	Kentucky	Maryland	Ohio
Alabama	6,866,632							
Colorado		795,320						
Illinois				325,097	53	1,925,000		
Indiana						1,923,486		
Maryland								
Massachusetts								
Michigan						1,025,020		
Minnesota						204,810		
New Jersey								
New York						406,281		
Ohio						2,559,995		18,500
Pennsylvania							42,739	
Tennessee			23,493					
Utah								
Washington								
West Virginia						101,724		
Kentucky, Missouri, Rhode Island, and Wisconsin						736,194		
	6,866,632	795,320	23,493	325,097	53	8,882,510	42,739	18,500

State in which coal was used	Coal produced in—							
	Pennsylvania	Tennessee	Utah	Virginia	Washington	West Virginia	Undistributed	Total [1]
Alabama								6,866,632
Colorado								795,320
Illinois	35,939			41,451		1,971,753		4,299,293
Indiana	156,834					4,786,851		6,867,171
Maryland	650,051					733,293		1,383,344
Massachusetts						288,531	509,168	797,699
Michigan						1,429,441		2,454,461
Minnesota	246,708					340,474		791,992
New Jersey				540,422		701,299		1,241,721
New York	2,142,088					625,108		3,173,477
Ohio	5,445,891					2,248,431		10,272,817
Pennsylvania	13,794,901					842,196		14,679,836
Tennessee		98,824					3,543	125,860
Utah			327,504					327,504
Washington					68,655			68,655
West Virginia	1,313,381					111,251		1,526,356
Kentucky, Missouri, Rhode Island, and Wisconsin	40,151			217,345		1,012,502	1,505	2,007,697
	23,825,944	98,824	327,504	799,218	68,655	15,091,130	514,216	57,679,835

[1] Difference between these totals and those shown in Table 2, etc., is due to change in stock, loss of weight in handling, and other factors.

In the last 10 years remarkable changes have occurred in the proportion of the coal derived from the principal producing States that was used for by-product coke. In 1916 fully 42.4 per cent of the coal charged in by-product ovens was produced in West Virginia, but in 1925 only 26.2 per cent came from West Virginia. During the same period the share of Pennsylvania increased from 31.9 to 41.3 per cent. The shift is associated with the construction of by-product plants in the Pittsburgh and adjacent districts, and the consequent diversion into by-product ovens of millions of tons of Connellsville and Pittsburgh coal that was formerly made into beehive coke.

TABLE 35.—*Proportion of total quantity of coal used in the manufacture of by-product coke that was derived from specified States, 1916–17 and 1922–1925*

Year	Pennsylvania	West Virginia	Virginia	Kentucky	Illinois	Indiana
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
1916	31.9	42.4		10.3		
1917	35.0	34.0	0.7	13.5	1.4	1.4
1922	34.7	28.0	1.9	17.5	2.0	1.1
1923	40.6	24.8	2.0	15.0	2.3	1.3
1924	44.5	19.8	2.0	16.4	1.5	
1925	41.3	26.2	1.4	15.4	.6	

YIELD OF COKE PER TON OF COAL

TABLE 36.—*Percentage yield of coke from coal in by-product and beehive ovens in the United States, 1922–1925*

State	1922		1923		1924		1925	
	By-product	Beehive	By-product	Beehive	By-product	Beehive	By-product	Beehive
Alabama	68.3	60.1	68.4	57.9	68.8	60.4	70.3	64.4
Colorado	68.9	65.0	68.6	65.0	69.3	64.2	69.3	64.8
Georgia		54.6		52.0		56.1		56.9
Illinois	68.9		69.4		69.3		71.3	
Indiana	72.5		70.6		73.3		74.9	
Kentucky	72.6	56.9	74.5	54.5	75.1	54.0	74.2	61.1
Maryland	73.8		73.4		73.4		73.4	
Massachusetts	67.1		69.4		69.2		67.1	
Michigan	72.3		72.1		73.5		71.5	
Minnesota	67.2		69.6		69.1		65.4	
Missouri	69.3		73.9		74.5		73.2	
New Jersey	72.9		74.3		72.3		72.8	
New Mexico		62.0		51.8		61.0		61.4
New York	67.7		68.4		70.7		72.2	
Ohio	68.9	65.0	68.1	65.0	67.9	65.0	68.7	64.8
Oklahoma				52.1				
Pennsylvania	69.0	65.6	68.5	65.3	67.1	65.4	67.1	65.7
Rhode Island	70.0		70.0		70.4		66.5	
Tennessee	74.1	49.4	72.3	54.5	73.3	52.9	70.6	63.7
Utah		57.6		57.8	51.2	59.4	53.2	59.0
Virginia		62.9		62.4		63.0		63.8
Washington	59.8	63.8	56.7	68.2	56.2	64.3	59.3	61.5
West Virginia	66.2	60.1	67.2	60.7	67.3	61.7	69.2	60.9
Wisconsin	67.8		68.8		67.7		69.4	
Average	69.5	64.5	69.3	64.4	69.3	64.6	69.9	65.2

COKE BREEZE

TABLE 37.—*Coke breeze recovered at coke plants in the United States, 1924–25, by States*

State	Yield (per cent) of coal)	Produced		Used for steam raising		Used for other purposes by producer		Sold		Put in stock (net tons)	Wasted (net tons)
		Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value		
1924											
BY-PRODUCT OVENS											
Alabama	4.2	265,799	$439,013	122,695	$225,896	56,456	$96,501	33,197	$83,898	58,838	34,234
Colorado	3.7	27,926	(1)	20,724	(1)	7,138	(1)	64	(1)		
Illinois	4.9	167,544	376,397	121,462	271,456			65,435	145,170	17,083	
Indiana	5.4	313,387	876,609	300,441	846,849	47,225	98,761	25,770	102,832	15,562	
Maryland	6.2	68,570	(1)	45,553	(1)	26,041	(1)	11,372	(1)		
Massachusetts	6.7	38,491	(1)	37,117	(1)	1,097	(1)	4,175	(1)	5,234	
Michigan	5.4	129,573	335,609	77,860	182,369	6,697	26,464	49,747	130,914	22,062	
Minnesota	8.3	62,170	130,768	44,191	76,667	7,866	25,269	12,935	49,460	4,153	45
New Jersey	4.1	49,903	(1)	49,369	(1)			876	(1)	1,233	
New York	4.5	101,824	207,374	88,492	176,886	2,813	13,495	9,517	16,166	30,084	52
Ohio	6.7	565,018	1,090,979	384,967	601,280	13,734	25,953	178,444	500,568	63,380	4,418
Pennsylvania	7.4	929,970	1,693,862	721,621	1,311,791	112,251	187,656	82,813	226,697	39,827	32,768
Tennessee	3.7	3,786	5,318	2,765	2,765			1,021	2,553	606	
Utah	13.2	25,013	(1)					6,800	(1)	18,234	
Washington	8.8	6,278	6,278	6,278	6,278						
West Virginia	6.8	100,845	145,341	53,960	55,731	9,774	14,356	38,042	75,952	508	
Kentucky, Missouri, Rhode Island, and Wisconsin	6.0	94,713	174,316	72,787	127,256	9,333	25,882	15,829	25,421	3,816	
Undistributed			697,563		347,564		51,873		131,844		
	6.0	2,950,810	6,179,427	2,150,282	4,232,788	300,425	566,210	536,037	1,491,475	280,620	71,517
BEEHIVE OVENS											
Colorado	[2] 1.8	5,811	21,824	308	1,849	7	40	5,496	19,935		
Pennsylvania	[2] 7.6	351,913	1,235,051	65,918	82,454	1,095	2,069	13,330	28,630	4,693	147,766
Tennessee	[2] 2.0	2,570	9,601			1,535	7,566	185	335		
Virginia	[2] .9	3,740	14,778					2,830	11,629		910
West Virginia	[2] 1.2	640	2,214								640
New Mexico, Ohio, Utah, and Washington	[2] 1.8	10,456	15,386	13	91	92	644	10,349	14,582		
	[2] 6.1	375,130	1,296,854	66,239	84,394	2,729	10,319	32,190	75,111	4,693	[3] 149,316

1925											
BY-PRODUCT OVENS											
Alabama	4.0	263,518	545,006	180,900	353,033	12,026	22,615	65,591	154,977	16,709	11,142
Colorado	4.3	30,678	(1)	25,724	(1)	4,740	(1)	214	(1)		
Illinois	5.2	220,390	566,183	165,042	424,439	2,965	5,189	56,371	146,557	57,443	
Indiana	5.3	363,746	933,418	294,841	715,791	50,172	109,047	27,605	121,455	9,332	
Maryland	6.8	94,287	(1)	21,290	(1)	25,318	(1)	40,005	(1)	39,915	17,768
Massachusetts	7.0	53,880	(1)	50,604	(1)	1,316	(1)	4,189	(1)	3,005	
Michigan	7.2	175,654	761,695	104,982	508,052	10,006	42,733	59,495	206,055	1,849	12,045
Minnesota	9.4	74,315	199,874	40,540	80,373	17,562	63,223	15,780	61,169	8,015	3,206
New Jersey	4.6	56,934	(1)	55,521	(1)			1,369	(1)	1,157	
New York	4.0	123,208	297,625	106,265	195,624	17,446	117,655	11,821	18,562	17,048	
Ohio	6.4	660,590	1,369,144	455,675	633,604	15,913	21,087	228,669	816,373	45,507	
Pennsylvania	7.9	1,155,925	2,606,977	764,763	1,272,473	151,225	249,462	272,105	1,175,482	10,281	7,738
Tennessee	3.7	4,642	4,642	4,068	4,068					1,180	
Utah	11.7	37,129	195,484					24,975	131,495	25,884	
Washington	7.3	5,020	5,020	5,020	5,020						
West Virginia	5.4	82,460	115,756	22,181	31,063	32,760	33,009	25,637	49,775	263	
Kentucky, Missouri, Rhode Island, and Wisconsin	7.2	143,693	769,683	84,381	149,894	12,492	43,143	15,620	35,104	9,188	
Undistributed			574,838		384,419		56,006		122,714		
	6.2	3,546,099	8,945,345	2,381,797	4,758,153	253,941	763,109	849,444	3,039,718	246,776	51,899
BEEHIVE OVENS											
Colorado, New Mexico, and Utah	[2] 1.7	7,418	33,919			123	354	7,296	33,563		
Ohio, Tennessee, and Virginia	[2] 3.4	10,570	11,136					5,770	6,161		4,600
Pennsylvania	[2] 4.8	254,320	406,381	76,784	88,704	2,525	5,348	54,918	151,232	1,237	107,849
West Virginia	[2] .5	438	1,576					388	1,493		50
	[2] 4.4	272,556	453,012	76,784	88,704	2,648	5,702	68,372	192,449	1,237	[3] 112,499

[1] Included under "Undistributed."
[2] Yield computed by dividing the production of breeze at the few plants reporting by the quantity of coal charged at these plants.
[3] As reported; quantity produced but not used was undoubtedly greater. See Mineral Resources, 1922, pt. 2, pp. 726–727

DISPOSAL, SALES, AND STOCKS

TABLE 38.—*By-product coke produced and sold or used by the producer in the United States, 1924–25*

[Exclusive of screenings and breeze]

State	Produced		Sold					
			Furnace				Foundry	
	Net tons	Value	To affiliated corporations		Merchant sales		Net tons	Value
			Net tons	Value	Net tons	Value		
1924								
Alabama	4,386,372	$16,563,223	44,964	$230,432	13,784	$64,291	295,932	$1,535,410
Colorado	523,405	(1)						
Illinois	2,355,474	20,187,519	66,482	477,744	70,415	531,829	163,208	1,661,729
Indiana	4,272,435	30,394,497	2,543	20,310			181,677	1,735,679
Maryland	810,118	(1)						
Massachusetts	397,640	(1)					207,129	(1)
Michigan	1,770,547	11,914,028	78,295	252,437	297,984	1,738,147	167,089	1,519,169
Minnesota	514,764	4,903,891					38,922	437,027
New Jersey	869,120	(1)	156,458	(1)	2,483	(1)	65,646	(1)
New York	1,600,669	11,108,944	554,211	3,662,176	236,304	1,772,399	29,441	236,446
Ohio	5,723,074	31,008,209	514,127	2,786,162	586,110	3,048,142	8,261	56,383
Pennsylvania	8,426,155	34,674,512	917,976	4,807,755	276,073	1,355,752	9,634	55,219
Tennessee	75,720	376,328			27,187	117,876	32,504	199,820
Utah	97,350	(1)						
Washington	39,903	283,710					2,832	24,072
West Virginia	998,914	4,402,186					24,160	107,282
Kentucky, Missouri, Rhode Island, and Wisconsin	1,121,908	9,387,943			80,043	499,227	327,414	3,171,976
Undistributed		20,485,019		1,258,271		21,858		2,685,122
	33,983,568	195,690,009	2,335,056	13,495,287	1,590,983	9,149,521	1,553,849	13,425,334

State	Sold—Continued						Used by producer in blast furnace, etc.	
	Domestic use		Industrial and other use		Total			
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
1924								
Alabama	57,663	$255,864	93,787	$415,493	506,130	$2,501,490	3,888,760	$14,137,294
Colorado	16,559	(1)			16,559	(1)	505,846	(1)
Illinois	329,789	2,552,829	333,513	3,535,514	963,407	8,759,645	1,327,820	10,799,086
Indiana	276,013	1,533,570	9,776	64,134	470,009	3,353,693	3,831,406	26,878,239
Maryland			113,836	(1)	113,836	(1)	693,588	(1)
Massachusetts	203,763	(1)			410,892	(1)	5,446	(1)
Michigan	789,126	4,998,320	12,697	109,625	1,345,191	8,617,698	535,296	3,817,866
Minnesota	181,557	1,735,481	3,029	28,938	223,508	2,201,446	199,253	1,695,269
New Jersey	158,804	(1)	427,104	(1)	810,495	(1)	51,850	(1)
New York	218,319	1,510,954	2,993	11,897	1,041,268	7,193,872	556,283	3,888,027
Ohio	28,709	135,236	78,287	449,133	1,215,494	6,475,056	4,538,383	24,724,264
Pennsylvania	20,496	79,006	58,179	331,487	1,282,358	6,629,219	7,145,581	28,046,102
Tennessee	22,868	92,950			82,559	410,646		
Utah	318	(1)			318	(1)	93,704	(1)
Washington					2,832	24,072	34,815	243,705
West Virginia	119,892	423,913	151,747	559,758	295,799	1,090,953	590,428	2,607,708
Kentucky, Missouri, Rhode Island, and Wisconsin	388,895	3,195,385	271,227	2,105,257	1,068,179	8,971,845	25,474	205,634
Undistributed		3,549,909		4,243,462		11,758,622		8,795,193
	2,812,771	20,063,417	1,556,175	11,854,698	9,848,834	67,988,257	24,023,933	125,838,387

1 Included under "Undistributed."

TABLE 38.—*By-product coke produced and sold or used by the producer in the United States, 1924–25*—Continued

[Exclusive of screenings and breeze]

State	Produced		Sold					
			Furnace				Foundry	
	Net tons	Value	To affiliated corporations		Merchant sales		Net tons	Value
			Net tons	Value	Net tons	Value		
1925								
Alabama	4,582,153	$16,347,971	22,190	$130,921	14,889	$74,445	315,373	$1,487,694
Colorado	480,057	(1)						
Illinois	3,011,497	22,568,845			227,882	1,001,114	209,403	1,911,220
Indiana	5,141,940	36,635,104	3,101	25,178			232,457	1,992,239
Maryland	1,019,209	(1)	16,391	(1)	134,070	(1)		
Massachusetts	535,302	(1)					201,354	(1)
Michigan	1,751,118	11,708,519			294,330	1,760,581	124,204	1,043,031
Minnesota	518,355	4,992,024					68,085	635,244
New Jersey	902,997	(1)	107,636	(1)			56,699	(1)
New York	2,219,409	12,968,066	636,335	3,583,338	55,184	318,633	89,654	755,217
Ohio	7,105,129	34,190,691	976,031	4,481,199	416,593	1,986,799	12,291	85,125
Pennsylvania	9,853,262	34,518,863	880,045	4,677,780	118,404	665,774	471	3,919
Tennessee	88,879	471,059			9,498	43,946	48,494	271,753
Utah	168,150	(1)			20,386	(1)		
Washington	40,757	289,782						
West Virginia	1,055,992	4,479,866			92,413	440,810	66,878	463,465
Kentucky, Missouri, Rhode Island, and Wisconsin	1,427,353	10,555,681			352,463	2,255,795	408,609	3,605,608
Undistributed		21,101,100		896,006		807,067		2,375,935
	39,912,159,	210,827,571	2,641,729	13,794,422	1,736,112	9,954,964	1,833,372	14,630,450

State	Sold—Continued						Used by producer in blast furnace, etc.	
	Domestic use		Industrial and other use		Total		Net tons	Value
	Net tons	Value	Net tons	Value	Net tons	Value		
1925								
Alabama	109,681	$445,972	81,100	$307,311	543,233	$2,446,343	4,073,648	$13,980,116
Colorado			22,257	(1)	22,257	(1)	466,488	(1)
Illinois	689,402	4,615,159	318,962	2,803,055	1,445,649	10,930,548	1,828,991	13,531,303
Indiana	370,651	2,090,566	17,298	104,188	623,507	4,212,171	4,539,369	32,595,831
Maryland					150,461	(1)	877,803	(1)
Massachusetts	336,116	(1)			537,470	(1)	5,854	(1)
Michigan	149,880	1,077,900	686,662	4,770,376	1,255,076	8,651,888	544,450	3,391,243
Minnesota	341,414	3,274,476	2,977	29,920	412,476	3,939,640	288,520	2,846,591
New Jersey	235,957	(1)	468,003	(1)	867,695	(1)	46,934	(1)
New York	495,210	3,526,315	120,579	987,366	1,396,962	9,170,869	844,470	3,952,120
Ohio	264,754	1,302,056	219,313	951,650	1,888,982	8,806,829	5,202,458	25,292,311
Pennsylvania	264,875	1,721,426	55,533	283,783	1,319,328	7,352,682	8,529,978	27,161,375
Tennessee	35,294	178,469			93,286	494,168		
Utah					20,386	(1)	145,391	(1)
Washington	3,030	25,755			3,030	25,755	36,507	255,549
West Virginia	126,882	695,313	6,620	28,731	292,793	1,628,319	776,585	2,934,738
Kentucky, Missouri, Rhode Island, and Wisconsin	661,922	4,624,447	73,331	499,363	1,496,325	10,985,213	16,392	120,275
Undistributed		4,943,571		4,084,086		13,106,665		8,183,856
	4,085,068	28,521,425	2,072,635	14,849,829	12,368,916	81,751,090	28,223,838	134,245,288

[1] Included under "Undistributed."

TABLE 39.—*Beehive coke produced and sold or used by the producer in the United States, 1924–25*

[Exclusive of screenings and breeze]

State	Produced		Sold					
			Furnace				Foundry	
	Net tons	Value	To affiliated corporations		Merchant sales		Net tons	Value
			Net tons	Value	Net tons	Value		
1924								
Alabama	154,686	$840,843	19,316	$108,503			33,437	$189,698
Colorado	212,115	(1)	136,581	(1)	29,286	(1)	17,640	(1)
Georgia	8,081	71,355					8,532	75,299
Kentucky	79,248	(1)			13,304	(1)		
New Mexico	83,070	(1)	71,685	(1)				
Ohio	109,625	(1)						
Pennsylvania	8,501,282	37,893,584	3,302,638	15,801,518	2,890,839	$10,813,848	992,679	5,159,096
Tennessee	131,755	635,736			6,926	50,445	758	6,456
Utah	159,744	1,310,929			149,635	1,233,473	10,109	77,456
Virginia	485,064	2,343,081	25,438	132,214	148,972	710,430	169,679	879,304
Washington	31,712	289,934					18,997	175,473
West Virginia	329,655	1,646,452	26,346	129,210	118,471	404,948	112,121	827,824
Undistributed		3,319,638		1,535,051		293,994		152,537
	10,286,037	48,351,552	3,582,004	17,706,496	3,357,433	13,507,138	1,363,952	7,543,143

State	Sold—Continued						Used by producer in blast furnace, etc.	
	Domestic use		Industrial and other use		Total			
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
1924								
Alabama			38,145	$187,970	90,898	$486,171	62,796	$349,188
Colorado	10,297	(1)	2,723	(1)	196,527	(1)	16,062	(1)
Georgia					8,532	75,299		
Kentucky					13,304	(1)	65,944	(1)
New Mexico	1,082	(1)	10,911	(1)	83,678	(1)		
Ohio	77	(1)			77	(1)	111,740	(1)
Pennsylvania	127,734	$403,573	82,716	282,227	7,396,606	32,460,262	1,093,896	5,257,346
Tennessee			14,558	59,753	22,242	116,654	106,759	507,105
Utah					159,744	1,310,929		
Virginia			52,182	203,951	396,271	1,925,899	91,530	428,271
Washington					18,997	175,473	12,605	113,445
West Virginia	696	2,989	58,811	215,759	316,445	1,580,730	12,705	62,926
Undistributed		102,771		102,589		2,186,942		1,154,075
	139,886	509,333	260,046	1,052,249	8,703,321	40,318,359	1,574,037	7,872,356

[1] Included under "Undistributed."

TABLE 39.—*Beehive coke produced and sold or used by the producer in the United States, 1924–25*—Continued

[Exclusive of screenings and breeze]

State	Produced		Sold					
			Furnace				Foundry	
	Net tons	Value	To affiliated corporations		Merchant sales		Net tons	Value
			Net tons	Value	Net tons	Value		
1925								
Alabama	88,328	$453,870					32,918	$184,212
Colorado	154,824	(1)			(2)	(2)	(2)	(2)
Georgia	4,925	38,464					4,953	38,683
Ohio	156,058	(1)						
Pennsylvania	9,574,341	41,875,615	3,377,946	$15,847,729	3,383,740	$12,960,297	849,978	4,092,915
Tennessee	127,669	690,041			30,183	147,065	5,401	28,687
Utah	146,009	1,240,256			146,009	1,240,256		
Virginia	421,691	1,901,623	31,429	115,892	120,108	497,000	139,787	753,480
Washington	38,500	327,483					38,400	326,883
West Virginia	490,040	2,168,879	4,621	18,459	197,865	739,468	79,021	520,164
Kentucky and New Mexico	152,459	1,004,350	65,732	515,721	[3]18,078	[3]138,036	[3]3,207	[3]26,571
Undistributed		2,030,985						
	11,354,784	51,731,566	3,479,728	16,497,801	3,895,983	15,722,122	1,153,665	5,971,595

State	Sold—Continued						Used by producer in blast furnace, etc.	
	Domestic use		Industrial and other use		Total			
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
1925								
Alabama			31,133	$148,771	64,051	$332,983	24,184	$120,527
Colorado	19,794	(2)			41,079	(2)	113,528	(1)
Georgia					4,953	38,683		
Ohio							156,258	(1)
Pennsylvania	357,930	$1,980,356	388,814	1,726,523	8,358,408	36,607,820	1,390,352	5,973,670
Tennessee			6,000	16,980	41,584	192.732	85,499	494,143
Utah					146,009	1,240,256		
Virginia	31	125	74,944	280,967	366,299	1,647,464	55,204	252,993
Washington			100	600	38,500	327,483		
West Virginia	14,260	89,729	62,995	259,145	358,762	1,626,965	131,336	541,169
Kentucky and New Mexico	683	[3]170,336	8,963	61,961	75,378	[3]912,625	76,583	421,207
Undistributed								1,699,250
	392,698	2,240,546	572,949	2,494,947	9,495,023	42,927,011	2,032,944	9,502,959

[1] Included under "Undistributed."

[3] Colorado included with Kentucky and New Mexico.

TABLE 40.—*Stocks of unsold coke at 21 by-product coke plants supplying gas for city use, 1922–1925, in net tons*

1922	
Jan. 1	1,017,000
Mar. 1	987,000
Oct. 1	250,000
Nov. 1	228,000
1923	
Jan. 1	212,000
Feb. 1	146,000
Mar. 1	92,000
June 1	202,000
July 1	308,000
1923	
Aug. 1	429,000
Sept. 1	501,000
Oct. 1	476,000
1924	
Jan. 1	772,000
Sept. 1	1,114,000
1925	
Mar. 1	631,000
June 1	722,000

TABLE 41.—*Stocks of coke and of breeze at the end of 1924 and 1925, by States, in net tons*

State	Furnace	Foundry	Breeze
1924			
BY-PRODUCT PLANTS			
Alabama	274,397	520	58,838
Colorado	2,711		
Illinois	14,732	417,287	17,083
Indiana	21,552	31,513	15,562
Maryland	5,718		
Massachusetts		11,381	5,234
Michigan	822	54,899	22,062
Minnesota	30,698	180,892	4,153
New Jersey		42,838	1,233
New York	9,603	25,016	30,084
Ohio	82,363	18,310	63,380
Pennsylvania	68,106	5,192	39,827
Tennessee	4,089	494	606
Utah	3,328		18,234
Washington	10,429		
West Virginia	17,359		508
Kentucky, Missouri, Rhode Island, and Wisconsin	9,173	142,838	3,816
	555,080	931,180	280,620
BEEHIVE PLANTS			
Alabama	57	1,845	
Colorado	487	790	
Georgia		69	
Kentucky			
New Mexico	805		
Ohio	3,855		
Pennsylvania	37,379	7,328	4,693
Tennessee	5,877	400	
Utah	296		
Virginia	4,628	1,725	
Washington		110	
West Virginia	8,530	240	
	61,914	12,507	4,693

TABLE 41.—*Stocks of coke and of breeze at the end of 1924 and 1925, by States, in net tons*—Continued

State	Furnace	Foundry	Domestic and other	Breeze
1925				
BY-PRODUCT PLANTS				
Alabama	206,333	593	1,758	16,709
Colorado	3,623			
Illinois	8,013	16,105	102,764	57,443
Indiana	12,892	565	14,490	9,332
Maryland	4,337			39,915
Massachusetts			3,359	3,005
Michigan	850	3,330	5,005	1,849
Minnesota	15,189	195	5,330	8,015
New Jersey			16,302	1,157
New York	7,731	335	13,537	17,048
Ohio	71,893	28	10,877	45,507
Pennsylvania	31,152		2,776	10,281
Tennessee		80	96	1,180
Utah	4,088		9,612	25,884
Washington			11,649	
West Virginia	191		30	263
Kentucky, Missouri, Rhode Island, and Wisconsin	1,399	1,722	66,338	9,188
	367,691	22,953	263,923	246,776
BEEHIVE PLANTS				
Alabama		156	150	
Colorado	834	660		
Georgia		40		
Ohio	3,854			
Pennsylvania	22,769	2,820	4,213	1,237
Tennessee	2,618	925	2,000	
Utah	437			
Virginia	1,302			
Washington		200		
West Virginia	4,401	2,137		
Kentucky and New Mexico	1,220		817	
	37,435	6,938	7,180	1,237

TABLE 42.—*Quantity of coke consumed in the manufacture of pig iron and for other purposes, 1913–1925, in net tons*

Year	Total production of coke	Imports	Exports	Indicated United States consumption	Consumed by iron furnaces [1]		Remainder consumed in other ways [2]	
					Quantity	Per cent	Quantity	Per cent
1913	46,299,530	101,212	987,395	45,413,347	37,192,287	81.9	8,221,060	18.1
1914	34,555,914	133,226	663,585	34,025,555	27,070,856	79.6	6,954,699	20.4
1915	41,581,150	53,222	895,509	40,738,863	33,224,328	81.6	7,514,535	18.4
1916	54,533,585	54,955	1,174,645	53,413,895	44,431,905	83.2	8,981,990	16.8
1917	55,606,828	24,872	1,409,320	54,222,380	44,493,316	82.1	9,729,064	17.9
1918	56,478,372	30,168	1,687,824	54,820,716	45,703,594	83.4	9,117,122	16.6
1919	44,180,557	16,486	716,956	43,480,087	35,250,943	81.1	8,229,144	18.9
1920	51,345,043	41,143	919,802	50,466,384	41,976,171	83.2	8,490,213	16.8
1921	25,287,622	30,990	306,755	25,011,857	18,162,147	72.6	6,849,710	27.4
1922	37,124,012	94,228	511,541	36,706,699	29,213,893	79.6	7,492,806	20.4
1923	56,977,534	85,002	1,237,342	55,825,194	44,761,526	80.2	11,063,668	19.8
1924	44,269,605	82,833	659,350	43,693,088	34,303,060	78.5	9,390,028	21.5
1925	51,266,943	201,579	953,812	50,514,710	39,241,812	77.7	11,272,898	22.3

[1] From reports of the American Iron and Steel Institute. [2] Includes changes in stocks.

TABLE 43.—*Pounds of coke and of coking coal consumed per gross ton of pig iron made in the United States, 1913–1925*

Year	Pounds of coke per gross ton of pig [1]	Per cent yield of coke per ton of coal	Calculated pounds coking coal per gross ton of pig	Year	Pounds of coke per gross ton of pig [1]	Per cent yield of coke per ton of coal	Calculated pounds coking coal per gross ton of pig
1913	2,433.3	66.9	3,637.2	1920	2,305.6	67.4	3,420.8
1914	2,354.4	66.9	3,519.3	1921	2,200.6	68.0	3,236.2
1915	2,252.0	67.2	3,351.2	1922	2,176.3	68.3	3,186.4
1916	2,285.3	66.8	3,421.1	1923	2,243.3	67.5	3,323.4
1917	2,339.7	66.4	3,523.6	1924	2,212.0	68.1	3,248.2
1918	2,375.2	66.4	3,577.1	1925	2,150.4	68.8	3,125.6
1919	2,310.2	67.4	3,427.6				

[1] From Annual Report of American Iron and Steel Institute.

VALUE AND PRICE

TABLE 44.—*Value of coke produced in the United States, 1924–25*

[Exclusive of screenings and breeze]

State	1924	1925	Increase or decrease, 1925			
			Total	Percentage		
				Total	By-product	Beehive
Alabama	$17,404,066	$16,801,841	−$602,225	−3.5	−1.3	−46.0
Colorado	(1)	(1)	(1)	(1)	(1)	(1)
Georgia	71,355	38,464	−32,891	−46.1	----------	−46.1
Illinois	20,187,519	22,568,845	+2,381,326	+11.8	+11.8	----------
Indiana	30,394,497	36,635,104	+6,240,607	+20.5	+20.5	----------
Kentucky	(1)	(1)	(1)	(1)	(1)	(1)
Maryland	(1)	(1)	(1)	(1)	(1)	----------
Massachusetts	(1)	(1)	(1)	(1)	(1)	----------
Michigan	11,914,028	11,708,519	−205,509	−1.7	−1.7	----------
Minnesota	4,903,891	4,992,024	+88,133	+1.8	+1.8	----------
Missouri	(1)	(1)	(1)	(1)	(1)	----------
New Jersey	(1)	(1)	(1)	(1)	(1)	----------
New Mexico	(1)	(1)	(1)	(1)	----------	(1)
New York	11,108,944	12,968,066	+1,859,122	+16.7	+16.7	----------
Ohio	(1)	(1)	(1)	(1)	+10.3	(1)
Pennsylvania	72,568,096	76,394,478	+3,826,382	+5.3	−.4	+10.5
Rhode Island	(1)	(1)	(1)	(1)	(1)	----------
Tennessee	1,012,064	1,161,100	+149,036	+14.7	+25.2	+8.5
Utah	(1)	(1)	(1)	(1)	(1)	−5.4
Virginia	2,343,081	1,901,623	−441,458	−18.8	----------	−18.8
Washington	573,644	617,265	+43,621	+7.6	+2.1	+13.0
West Virginia	6,048,638	6,648,745	+600,107	+9.9	+1.8	+31.7
Wisconsin	(1)	(1)	(1)	(1)	(1)	----------
Combined States	65,511,738	70,123,063	+4,611,325	+7.0	+6.0	−8.6
	244,041,561	262,559,137	+18,517,576	+7.6	+7.7	+7.0

[1] Included under "Combined States."

TABLE 45.—*Average value per net ton of coke exported from the United States, 1900–1925*

[Computed from records of Bureau of Foreign and Domestic Commerce]

Year	Average value	Year	Average value	Year	Average value
1900	$3.22	1909	$3.22	1918	$7.03
1901	3.63	1910	3.10	1919	7.15
1902	4.06	1911	3.14	1920	10.87
1903	4.49	1912	3.29	1921	9.00
1904	3.94	1913	3.35	1922	8.44
1905	3.34	1914	3.37	1923	9.61
1906	3.21	1915	3.45	1924	7.47
1907	3.27	1916	3.58	1925	7.20
1908	3.11	1917	6.06		

TABLE 46.—*Average receipts per ton for coke sold in the United States, 1924–25*

State	By-product					Beehive				
	Furnace		Foundry	Domestic	Industrial, etc.	Furnace		Foundry	Domestic	Industrial, etc.
	To affiliated corporations	Merchant sales				To affiliated corporations	Merchant sales			
1924										
Alabama	$5.12	$4.66	$5.19	$4.44	$4.43	$5.62	------	$5.67	------	$4.93
Colorado	------	------	------	(1)	------	(1)	(1)	(1)	(1)	(1)
Georgia	------	------	------	------	------	------	------	8.83	------	------
Illinois	7.19	7.55	10.18	7.74	10.60	------	------	------	------	------
Indiana	7.99	------	9.55	5.56	6.56	------	------	------	------	------
Kentucky	------	(1)	(1)	(1)	------	------	(1)	------	------	------
Maryland	------	------	------	------	(1)	------	------	------	------	------
Massachusetts	------	------	(1)	(1)	------	------	------	------	------	------
Michigan	3.22	5.83	9.09	6.33	8.63	------	------	------	------	------
Minnesota	------	------	11.23	9.56	9.55	------	------	------	------	------
Missouri	------	------	(1)	(1)	(1)	------	------	------	------	------
New Jersey	(1)	(1)	(1)	(1)	(1)	------	------	------	------	------
New Mexico	------	------	------	------	------	(1)	------	------	(1)	(1)
New York	6.61	7.50	8.03	6.92	3.97	------	------	------	------	------
Ohio	5.42	5.20	6.83	4.71	5.74	------	------	------	(1)	------
Pennsylvania	5.24	4.91	5.73	3.85	5.70	4.78	$3.74	5.20	$3.16	3.41
Rhode Island	------	------	(1)	(1)	------	------	------	------	------	------
Tennessee	------	4.34	6.15	4.06	------	------	7.28	8.52	------	4.10
Utah	------	------	------	(1)	------	------	8.24	7.66	------	------
Virginia	------	------	------	------	------	5.20	4.77	5.18	------	3.91
Washington	------	------	8.50	------	------	------	------	9.24	------	------
West Virginia	------	------	4.44	3.54	3.69	4.90	3.42	7.38	4.29	3.67
Wisconsin	------	------	(1)	(1)	(1)	------	------	------	------	------
Combined States	8.04	6.27	9.76	8.78	7.82	7.37	6.90	8.65	8.97	7.52
	5.78	5.75	8.64	7.13	7.62	4.94	4.02	5.53	3.64	4.05
1925										
Alabama	5.90	5.00	4.72	4.07	3.79	------	------	5.60	------	4.78
Colorado	------	------	------	------	(1)	------	(1)	(1)	(1)	------
Georgia	------	------	------	------	------	------	------	7.81	------	------
Illinois	------	7.03	9.13	6.69	8.79	------	------	------	------	------
Indiana	8.12	------	8.57	5.64	6.02	------	------	------	------	------
Kentucky	------	(1)	(1)	(1)	------	------	------	------	------	------
Maryland	(1)	(1)	------	------	------	------	------	------	------	------
Massachusetts	------	------	(1)	(1)	------	------	------	------	------	------
Michigan	------	5.98	8.40	7.19	6.95	------	------	------	------	------
Minnesota	------	------	9.33	9.59	10.05	------	------	------	------	------
Missouri	------	(1)	(1)	(1)	(1)	------	------	------	------	------
New Jersey	(1)	------	(1)	(1)	(1)	------	------	------	------	------
New Mexico	------	------	------	------	------	(1)	------	------	(1)	(1)
New York	5.63	5.77	8.42	7.12	8.19	------	------	------	------	------
Ohio	4.59	4.77	6.93	4.91	4.34	------	------	------	------	------
Pennsylvania	5.32	5.62	8.32	6.50	5.11	4.69	3.83	4.82	5.53	4.44
Rhode Island	------	------	(1)	(1)	------	------	------	------	------	------
Tennessee	------	4.63	5.60	5.06	------	------	4.87	5.31	------	2.83
Utah	------	(1)	------	------	------	------	8.49	------	------	------
Virginia	------	------	------	------	------	3.69	4.14	5.39	4.03	3.75
Washington	------	------	------	8.50	------	------	------	8.51	------	------
West Virginia	------	4.77	6.93	5.48	4.34	3.99	3.74	6.58	6.29	4.11
Wisconsin	------	(1)	(1)	(1)	------	------	------	------	------	------
Combined States	7.22	6.04	8.98	7.75	8.13	7.84	7.63	8.29	8.32	6.91
	5.22	5.73	7.98	6.98	7.16	4.74	4.04	5.18	5.71	4.35

[1] Included under "Combined States."

TABLE 47.—*Average value per ton of all coke produced, 1913–1925, and average receipts per ton for coke sold, 1918–1925*

Year	Value per ton produced [1]			Receipts per ton sold		
	By-product	Beehive	Total	By-product	Beehive	Total
1913	$3.83	$2.39	$2.78	(2)	(2)	(2)
1914	3.39	2.15	2.56	(2)	(2)	(2)
1915	3.45	2.07	2.54	(2)	(2)	(2)
1916	3.95	2.69	3.13	(2)	(2)	(2)
1917	6.18	4.81	5.36	(2)	(2)	(2)
1918	7.42	6.21	6.77	$7.88	$6.08	$6.52
1919	6.37	5.15	5.85	6.58	5.05	5.60
1920	10.15	7.94	9.27	10.77	7.43	8.50
1921	5.95	5.45	5.84	7.72	5.41	6.56
1922	6.59	5.84	6.42	8.45	5.79	7.19
1923	6.85	5.98	6.56	8.53	6.06	6.98
1924	5.76	4.70	5.51	6.90	4.63	5.84
1925	5.28	4.56	5.12	6.61	4.52	5.70

[1] Includes operators' statements of the value of coke consumed by them in associated enterprises but not sold, except that in 1918 and 1920 the value of such coke was estimated for each State at the average value for that State of the part of the product reported sold.

[2] Data not available.

TABLE 48.—*Average monthly prices per net ton at ovens of spot or prompt Connellsville furnace and foundry coke, 1905–1925*[1]

Month	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
FURNACE																					
January	$2.46	$2.62	$3.53	$1.92	$1.59	$2.55	$1.40	$1.82	$3.88	$1.85	$1.50	$2.94	$9.50	$6.00	$5.65	$6.00	$5.06	$2.75	$8.05	$3.94	$3.94
February	2.56	2.14	3.50	1.86	1.59	2.12	1.45	1.78	2.52	1.85	1.50	3.38	9.62	6.00	4.44	6.00	4.50	3.04	7.13	4.08	3.63
March	2.43	2.24	3.02	1.72	1.60	2.00	1.55	2.12	2.40	1.90	1.50	3.47	9.60	6.00	4.06	6.00	4.35	3.25	7.25	4.08	3.35
April	2.07	2.45	2.72	1.57	1.60	1.77	1.59	2.39	2.15	1.86	1.50	2.41	7.38	6.00	3.65	9.60	3.50	4.48	6.31	3.75	3.04
May	1.87	2.46	2.16	1.50	1.57	1.66	1.50	2.28	2.13	1.77	1.50	2.30	7.80	6.00	3.69	12.00	3.25	6.00	5.15	3.25	3.00
June	1.82	2.32	1.89	1.55	1.52	1.65	1.42	2.02	2.11	1.75	1.56	2.49	11.25	6.00	4.00	15.00	3.00	6.75	4.75	3.19	2.77
July	1.81	2.51	2.40	1.57	1.58	1.59	1.44	2.21	2.45	1.75	1.64	2.75	12.75	6.00	4.07	17.20	2.81	10.75	4.55	3.00	2.83
August	1.80	2.76	2.62	1.50	1.66	1.57	1.46	2.21	2.50	1.70	1.50	2.80	13.60	6.00	4.31	17.75	2.75	12.80	4.56	3.00	3.06
September	2.10	2.85	2.82	1.50	2.39	1.60	1.50	2.37	2.29	1.65	1.61	2.94	11.12	6.00	4.56	16.70	3.15	11.13	4.50	3.00	3.49
October	2.61	2.84	2.85	1.53	2.76	1.59	1.50	3.41	2.98	1.60	2.03	4.88	6.00	6.00	4.52	15.12	3.28	9.60	3.85	3.00	6.13
November	2.95	3.13	2.41	1.72	2.74	1.50	1.52	3.94	1.82	1.52	2.28	6.90	6.00	6.00	5.87	8.26	3.03	7.19	3.81	3.04	5.75
December	2.79	3.52	2.06	1.82	2.67	1.44	1.60	4.00	1.75	1.50	2.64	8.38	6.00	6.00	6.12	6.20	2.75	7.00	4.00	3.68	4.32
Average	2.27	2.65	2.67	1.65	1.94	1.75	1.49	2.55	2.42	1.73	1.73	3.80	9.22	6.00	4.58	11.32	3.45	7.06	5.33	3.42	3.78
FOUNDRY																					
January	2.38	3.42	4.25	2.45	2.00	2.90	1.90	1.97	4.40	2.50	2.00	3.50	9.75	7.00	6.25	7.00	6.38	3.75	8.70	4.75	4.88
February	2.68	2.65	4.00	2.39	1.95	2.70	2.10	2.09	3.25	2.50	2.00	3.50	11.00	7.00	5.00	7.00	5.63	4.00	8.25	4.88	4.31
March	2.75	2.78	3.65	2.25	1.95	2.60	2.05	2.56	3.00	2.45	2.00	3.75	11.60	7.00	4.94	7.00	5.45	4.25	8.38	4.88	4.15
April	2.70	2.95	3.31	2.22	1.86	2.45	2.00	2.69	3.00	2.40	2.00	3.56	9.13	7.00	4.30	10.20	4.75	5.06	7.56	4.75	4.00
May	2.55	2.81	3.00	2.03	1.85	2.20	1.81	2.58	2.85	2.40	2.00	3.25	8.90	7.00	4.31	13.00	4.50	6.30	6.15	4.69	4.00
June	2.40	2.65	3.00	2.00	1.80	2.17	1.76	2.40	2.80	2.32	2.00	3.25	11.72	7.00	4.56	15.75	4.45	7.25	5.56	4.38	3.80
July	2.35	2.79	3.00	2.00	2.00	2.15	1.82	2.40	2.70	2.22	2.05	3.25	13.25	7.00	5.00	17.80	4.06	11.00	5.35	4.10	3.75
August	2.25	3.00	3.08	1.92	1.95	2.15	1.85	2.40	2.90	2.25	2.00	3.30	13.20	7.00	5.25	18.88	3.75	13.90	5.38	4.00	3.88
September	2.50	3.19	3.20	1.90	2.55	2.12	1.85	2.54	2.90	2.10	2.07	3.31	11.75	7.00	5.80	17.70	4.15	12.50	5.50	4.00	4.25
October	3.00	3.31	3.25	2.10	2.90	2.10	1.81	3.65	2.81	2.00	2.35	3.88	6.00	7.00	6.25	16.38	4.38	11.70	4.80	4.00	6.31
November	3.50	4.00	2.75	2.20	3.25	2.05	1.85	4.25	2.60	1.92	2.88	7.10	7.00	7.00	7.00	9.50	4.19	8.38	4.81	4.06	6.81
December	3.50	4.12	2.50	2.25	3.20	1.97	1.90	4.50	2.50	1.90	2.95	8.63	7.00	7.00	7.00	7.00	3.81	7.88	4.81	4.55	5.20
Average	2.71	3.14	3.25	2.14	2.27	2.30	1.89	2.84	2.98	2.25	2.19	4.19	10.03	7.00	5.47	12.27	4.63	8.00	6.27	4.42	4.61

[1] Iron Age, Jan. 6, 1927, p. 120.

EXPORTS AND IMPORTS [2]

TABLE 49.—*Coke exported from the United States, 1909–1925*

Year	Net tons	Value	Year	Net tons	Value
1909	1,002,916	$3,232,673	1918	1,687,824	$11,861,408
1910	984,618	3,053,293	1919	716,956	5,128,119
1911	1,023,727	3,215,990	1920	919,802	9,993,665
1912	912,576	3,002,742	1921	306,755	2,760,939
1913	987,395	3,309,930	1922	511,541	4,319,538
1914	663,585	2,233,686	1923	1,237,342	11,889,897
1915	895,509	3,092,498	1924	659,350	4,926,478
1916	1,174,645	4,202,236	1925	953,812	6,871,962
1917	1,409,320	8,543,746			

TABLE 50.—*Coke exported from the United States, 1923–1925, by customs districts*

District	1923		1924		1925	
	Net tons	Value	Net tons	Value	Net tons	Value
Arizona	66,363	$552,698	5,182	$44,092	836	$7,001
Buffalo	400,597	3,536,828	212,930	1,453,105	413,811	2,998,980
Dakota	25,339	283,804	42,731	345,668	41,229	416,826
Duluth-Superior	2,894	33,570	5,798	50,137	11,989	115,869
El Paso	10,637	128,442	188	2,242	204	2,362
Florida	7,730	112,985	5,952	56,910	5,836	47,654
Georgia			577	11,845		
Los Angeles	73	1,571	7	128	4	66
Maine and New Hampshire	4,633	51,801	3,221	24,151	3,380	24,926
Maryland	190,502	1,893,238	35,842	219,750	17,408	110,216
Massachusetts	28	236				
Michigan	193,972	1,918,854	180,626	1,265,672	333,384	2,163,113
Mobile	8,865	113,816	3,048	52,536	4,204	68,596
New Orleans	13,569	171,709	14,137	195,658	5,611	77,869
New York	14,567	222,348	18,329	257,294	5,757	87,614
Ohio	65,619	387,820	85,407	521,465	68,649	403,390
Philadelphia	152,930	1,769,580	6,872	99,066	1,090	9,225
Porto Rico	20	324	76	769	20	354
Rochester	1,770	11,450	214	1,774	424	2,531
Sabine	6,713	48,332	17,140	132,993	8,518	78,135
St. Lawrence	37,746	381,929	7,994	74,901	18,647	157,147
San Antonio	3,782	26,787	1,346	10,126	1,089	7,632
San Francisco	111	2,569	73	1,825	69	1,427
South Carolina			149	1,201	416	2,986
Vermont	15,698	162,632	9,458	77,929	10,923	84,839
Virginia	13,162	76,164	898	10,931		
Washington	22	410	1,155	14,310	314	3,204
	1,237,342	11,889,897	659,350	4,926,478	953,812	6,871,962

[2] Figures of exports and imports compiled by J. A. Dorsey, of the Bureau of Mines, from records of the Bureau of Foreign and Domestic Commerce.

TABLE 51.—*Coke exported from the United States, 1923–1925, by countries of destination*

Destination	1923		1924		1925	
	Net tons	Value	Net tons	Value	Net tons	Value
Argentina	110	$1,250	8	$177		
Australia					32	$203
Belgium	101,529	1,083,370				
Bermuda	1	20	1	13		
Brazil	6	92	35	441	28	419
British Honduras	4	71				
Canada	748,219	6,768,462	549,452	3,828,462	902,688	6,370,289
Chile	41,548	297,444	32,454	198,812	17,413	110,531
Colombia	57	1,250	91	1,906	199	3,342
Costa Rica	110	1,961	52	923	84	1,560
Cuba	7,073	86,378	7,586	70,086	6,906	58,522
Denmark	24	451				
Dominican Republic	127	2,621	240	3,600	336	4,348
Ecuador	90	2,186	93	1,813	73	1,551
England [1]	2,955	44,370	739	12,131	564	10,000
France	143,828	1,604,131	17,303	257,122	3,282	52,148
French Oceania	2	44	13	300	1	12
Germany	60,141	749,058	9,783	117,704	5,605	63,000
Guatemala	96	1,875	91	1,639	115	1,665
Haiti	11	200	4	112	25	420
Honduras	122	2,139	90	1,163	78	1,056
Ireland	22	208				
Italy	27,866	260,694	12,003	108,212	569	10,160
Jamaica	7	185			4	100
Mexico	81,688	724,396	7,750	67,101	3,900	32,502
Netherlands	8,103	108,217	7,805	120,686	4,885	86,793
Newfoundland and Labrador	36	498	157	1,527	81	1,471
Nicaragua	22	539	44	773	47	743
Norway	9,785	102,771	6,981	74,667	6,107	52,206
Other British West Indies	102	1,335	56	531	267	1,825
Panama	179	4,588	390	5,855	312	3,530
Paraguay			28	504	27	432
Peru	122	1,333	3,556	22,386		
Philippine Islands			25	361		
Salvador	50	1,155	49	1,126	55	1,036
Scotland [1]	1,075	15,800				
Spain	1,122	10,220				
Switzerland			2,373	24,423		
Trinidad and Tobago	11	130	1	23	17	156
Venezuela	1,098	10,440	94	1,870	111	1,924
Virgin Islands of the United States	1	15	3	29	1	18
	1,237,342	11,889,897	659,350	4,926,478	953,812	6,871,962

[1] Reported as United Kingdom, 1925.

TABLE 52.—*Coke exported from the United States, 1923–1925, by months*

Month	1923		1924		1925	
	Net tons	Value	Net tons	Value	Net tons	Value
January	87,090	$923,691	59,491	$499,248	70,386	$526,068
February	79,508	855,678	60,202	512,358	68,466	535,014
March	109,224	1,124,789	59,057	458,213	73,898	499,462
April	226,002	2,405,744	42,769	308,893	59,157	429,449
May	185,520	1,816,332	45,130	328,619	65,673	435,001
June	71,503	680,325	54,027	391,569	56,542	357,809
July	67,717	600,728	54,861	412,180	71,175	455,069
August	111,145	896,665	47,385	360,316	71,360	482,403
September	106,936	930,039	46,820	317,651	94,030	614,193
October	87,065	744,987	62,450	420,927	79,075	550,223
November	55,287	490,443	64,094	442,140	96,937	797,238
December	50,345	420,476	63,064	474,364	147,113	1,190,033
	1,237,342	11,889,897	659,350	4,926,478	953,812	6,871,962

TABLE 53.—*Coke imported for consumption in the United States, 1909–1925*

Year	Net tons	Value	Year	Net tons	Value
1909	191,253	$736,120	1918	30,168	$221,880
1910	172,716	625,130	1919	16,486	140,653
1911	77,923	254,455	1920	41,143	403,175
1912	123,614	488,398	1921	30,990	336,394
1913	101,212	435,157	1922	94,228	802,987
1914	133,226	551,104	1923	85,002	862,596
1915	53,222	222,382	1924	82,833	795,477
1916	54,955	249,514	1925	201,579	1,609,474
1917	24,872	146,451			

TABLE 54.—*Coke imported into the United States, 1923–1925, by customs districts*

District	1923		1924		1925	
	Net tons	Value	Net tons	Value	Net tons	Value
Buffalo	8,416	$140,935	14,241	$286,660	22,429	$462,772
Chicago	1	50				
Dakota					20	122
Hawaii	339	3,137			581	3,542
Los Angeles	12,588	114,049	21,311	141,888	22,478	135,521
Maine and New Hampshire	342	3,349	299	2,139	5,605	28,147
Massachusetts					25,679	169,334
Michigan	1,018	22,015	343	7,341	27	201
Montana and Idaho	25,697	275,107	8,699	90,227	24,900	209,123
New York	11,336	75,018			43,166	260,681
Ohio					1	7
Oregon	1,564	14,253	1,342	11,611	3,228	17,075
Rhode Island					3,530	14,573
St. Lawrence					2,759	31,316
San Francisco	21,573	198,262	31,426	221,519	38,070	225,488
Vermont	84	771	86	621	460	2,942
Washington	2,044	15,650	5,086	33,471	8,646	48,630
	85,002	862,596	82,833	795,477	201,579	1,609,474

TABLE 55.—*Coke imported into the United States, 1923–1925, by countries*

Country	1923		1924		1925	
	Net tons	Value	Net tons	Value	Net tons	Value
Belgium					4,397	$20,844
Canada	36,366	$448,029	28,684	$397,868	52,182	716,251
China	(1)	10				
France	1	50				
Germany			5,638	30,264	15,447	95,180
Ireland	663	5,871	1,923	12,412		
Netherlands			4,756	34,879	17,197	134,022
Sweden					112	1,577
United Kingdom:						
England	47,410	403,445	43,933	313,906	112,244	641,600
Scotland	562	5,191	899	6,148		
	85,002	862,596	82,833	795,477	201,579	1,609,474

[1] Less than 1 ton.

SHIPMENTS BY RAIL AND WATER

TABLE 56.—*By-product coke loaded for shipment on originating railroads and waterways in the United States in 1925, by States, in net tons, as reported by the coke producers*

State	Route	Shipments	Production	Percentage of production shipped [1]
	RAILROADS			
Alabama	Louisville & Nashville	421,934		
	Mobile & Ohio	184,559		
	St. Louis-San Francisco	231,570		
	Southern	412,427		
	Southern; Birmingham Southern; Illinois Central; Louisville & Nashville; St. Louis-San Francisco; Seaboard Air Line	7,901		
		1,258,391	4,582,153	27.5
Colorado	Colorado & Wyoming	22,257	489,657	4.5
Illinois	Belt Railway of Chicago	395,185		
	Chicago & Illinois Western	22,708		
	Chicago Short Line	968,925		
	Elgin, Joliet & Eastern	577,998		
	Alton & Southern; Chicago & Alton; Illinois Central; Terminal Railroad Assn	210,623		
		2,175,439	3,011,497	72.2
Indiana	Chesapeake & Ohio	5,000		
	Chicago, Milwaukee & St. Paul	157,226		
	Cleveland, Cincinnati, Chicago & St. Louis	363,416		
	Elgin, Joliet & Eastern	982,284		
	Indiana Harbor Belt	8,926		
	New York, Chicago & St. Louis	785		
	Pennsylvania	4,280		
		1,521,917	5,141,940	29.6
Maryland	Baltimore & Ohio; Pennsylvania; Western Maryland	47,854	1,019,209	4.7
Massachusetts	Boston & Albany	172,713		
	Boston & Maine	172,713		
		345,426	535,302	64.5
Michigan	Detroit & Toledo Shore Line	9,810		
	Detroit, Toledo & Ironton	10,950		
	Michigan Central	62,250		
		83,010	1,751,118	4.7
Minnesota	Duluth, Missabe & Northern	6,570		
	Great Northern	192,537		
	Northern Pacific	217,157		
		416,264	518,355	80.3
New Jersey	Delaware, Lackawanna & Western	47,431		
	Erie	91,763		
	Pennsylvania	7,722		
		146,916	903,997	16.3
New York	Delaware & Hudson	12,000		
	Delaware, Lackawanna & Western	355,972		
	Lehigh Valley	6,224		
	New York Central	502,801		
	South Buffalo	82,640		
		959,637	2,219,409	43.2

[1] Excess of shipments over production represents inclusion of screenings or withdrawal from stock.

TABLE 56.—*By-product coke loaded for shipment on originating railroads and waterways in the United States in 1925, by States, in net tons, as reported by the coke producers*—Continued

State	Route	Shipments	Production	Percentage of production shipped
	RAILROADS—continued			
Ohio	Baltimore & Ohio	192,419		
	Erie	92,878		
	Lake Terminal	11,869		
	Newburgh & South Shore	305,051		
	New York Central	42,633		
	Norfolk & Western	470,190		
	Pennsylvania	24,918		
	Pittsburgh & Lake Erie	94,695		
	Toledo Terminal	31,926		
	Wheeling & Lake Erie	5,208		
	Baltimore & Ohio; Erie; Pennsylvania	47,766		
		1,319,523	7,105,129	18.6
Pennsylvania	Lehigh Valley	54,352		
	Pennsylvania	368,572		
	Philadelphia & Reading	229,160		
	Union	4,225,541		
	Upper Merion & Plymouth	375,000		
		5,252,625	9,853,262	53.3
Tennessee	Southern	93,286	88,879	105.0
Utah	Denver & Rio Grande Western; Union Pacific	45,361	168,150	27.0
Washington	Northern Pacific	3,030	40,757	7.4
West Virginia	Baltimore & Ohio	273,552		
	Benwood & Wheeling Connecting Ry	6,620		
	Pennsylvania	7,689		
		287,861	1,055,992	27.3
Kentucky, Missouri, Rhode Island, and Wisconsin.	Chesapeake & Ohio; Chicago & North Western; Chicago, Milwaukee & St. Paul; Minneapolis, St. Paul & Sault Ste. Marie; Missouri Pacific; New York, New Haven & Hartford	1,382,783	1,427,353	96.9
	Total railroad shipments	15,361,580		
	WATERWAYS			
Maryland	Chesapeake Bay	102,607	(1)	10.1
Massachusetts	Mystic River	173,233	(1)	32.4
New Jersey	Delaware River	18,020		
	Hackensack River	530,930		
		548,950	(1)	60.7
Pennsylvania	Monongahela River	427,017	(1)	4.3
	Total waterway shipments	1,251,807		
	Grand total	16,613,387	39,912,159	41.6

[1] Figures given under respective States above.

TABLE 57.—*By-product coke loaded for shipment on originating railroads and waterways in the United States in 1925, by routes, in net tons, as reported by the coke producers*

Route	State	Quantity		Percentage of total
		By States	Total	
RAILROADS				
Baltimore & Ohio	Ohio	192,419	465,971	2.8
	West Virginia	273,552		
Belt Railway of Chicago	Illinois	395,185	395,185	2.4
Benwood & Wheeling Connecting Ry	West Virginia	6,620	6,620	(1)
Boston & Albany	Massachusetts	172,713	172,713	1.0
Boston & Maine	do	172,713	172,713	1.0
Chesapeake & Ohio	Indiana and Kentucky	553,667	553,667	3.3
Chicago & Illinois Western	Illinois	22,708	22,708	.1
Chicago, Milwaukee & St. Paul	Indiana and Wisconsin	532,631	532,631	3.2
Chicago Short Line	Illinois	968,925	968,925	5.9
Cleveland, Cincinnati, Chicago & St. Louis	Indiana	363,416	363,416	2.2
Colorado & Wyoming	Colorado	22,257	22,257	.1
Delaware & Hudson	New York	12,000	12,000	.1
Delaware, Lackawanna & Western	New Jersey	47,431	403,403	2.4
	New York	355,972		
Detroit & Toledo Shore Line	Michigan	9,810	9,810	.1
Detroit, Toledo & Ironton	do	10,950	10,950	.1
Duluth, Missabe & Northern	Minnesota	6,570	6,570	(1)
Elgin, Joliet & Eastern	Illinois	577,998	1,560,282	9.4
	Indiana	982,284		
Erie	New Jersey	91,763	184,641	1.1
	Ohio	92,878		
Great Northern	Minnesota	192,537	192,537	1.2
Indiana Harbor Belt	Indiana	8,926	8,926	.1
Lake Terminal	Ohio	11,869	11,869	.1
Lehigh Valley	New York	6,224	60,576	.4
	Pennsylvania	54,352		
Louisville & Nashville	Alabama	421,934	421,934	2.5
Michigan Central	Michigan	62,250	62,250	.4
Mobile & Ohio	Alabama	184,559	184,559	1.1
Newburgh & South Shore	Ohio	305,051	305,051	1.8
New York Central	New York	502,801	545,434	3.3
	Ohio	42,633		
New York, Chicago & St. Louis	Indiana	785	785	(1)
Norfolk & Western	Ohio	470,190	470,190	2.8
Northern Pacific	Minnesota	217,157	220,187	1.3
	Washington	3,030		
Pennsylvania	Indiana	4,280	413,181	2.5
	New Jersey	7,722		
	Ohio	24,918		
	Pennsylvania	368,572		
	West Virginia	7,689		
Philadelphia & Reading	Pennsylvania	229,160	229,160	1.4
Pittsburgh & Lake Erie	Ohio	94,665	94,665	.6
St. Louis-San Francisco	Alabama	231,570	231,570	1.4
South Buffalo	New York	82,640	82,640	.5
Southern	Alabama	412,427	505,713	3.0
	Tennessee	93,286		
Toledo Terminal	Ohio	31,926	31,926	.2
Union	Pennsylvania	4,225,541	4,225,541	25.4
Upper Merion & Plymouth	do	375,000	375,000	2.3
Wheeling & Lake Erie	Ohio	5,208	5,208	(1)
Alton & Southern; Chicago & Alton; Illinois Central; Terminal R. R. Assn.	Illinois	210,623	210,623	1.3
Baltimore & Ohio; Erie; Pennsylvania	Ohio	47,766	47,766	.3
Baltimore & Ohio; Pennsylvania; Western Maryland.	Maryland	47,854	47,854	.3
Chicago & North Western; Minneapolis, St. Paul & Sault Ste. Marie; Missouri Pacific; New York, New Haven & Hartford.	Missouri, Rhode Island, and Wisconsin.	458,711	458,711	2.8
Denver & Rio Grande Western; Union Pacific.	Utah	45,361	45,361	.3
Birmingham Southern; Illinois Central; Louisville & Nashville; St. Louis-San Francisco; Seaboard Air Line; Southern.	Alabama	7,901	7,901	(1)
Total railroad shipments		15,361,580	15,361,580	92.5

[1] Less than 0.1 per cent.

TABLE 57.—*By-product coke loaded for shipment on originating railroads and waterways in the United States in 1925, by routes, in net tons, as reported by the coke producers*—Continued

Route	State	Quantity		Percentage of total
		By States	Total	
WATERWAYS				
Chesapeake Bay	Maryland	102,607	102,607	.6
Delaware River	New Jersey	18,020	18,020	.1
Hackensack River	do	530,930	530,930	3.2
Mystic River	Massachusetts	173,233	173,233	1.0
Monongahela River	Pennsylvania	427,017	427,017	2.6
Total waterway shipments			1,251,807	7.5
Grand total			16,613,387	100.0

TABLE 58.—*Beehive coke loaded for shipment on originating railroads and waterways in the United States in 1925, by States, in net tons, as reported by the coke producers*

State	Railroad	Shipments	Production	Percentage of production shipped[1]
Alabama	Louisville & Nashville	63,702		
	St. Louis-San Francisco	36		
	Southern	314		
		64,052	88,328	72.5
Colorado	Colorado & Wyoming	51,009		
	Denver & Rio Grande Western	105,938		
		156,947	154,824	101.4
Georgia	Central of Georgia	4,953	4,925	100.6
Ohio			156,058	
Pennsylvania	Baltimore & Ohio	1,103,008		
	Buffalo & Susquehanna	235,877		
	Buffalo, Rochester & Pittsburgh	68,991		
	Ligonier Valley	131,342		
	Monongahela	2,594,224		
	Pennsylvania	4,318,842		
	Pittsburgh & Lake Erie	200,147		
	Washington Run	97,832		
		8,750,263	9,574,341	91.4
Tennessee	Nashville, Chattanooga & St. Louis	24,584		
	Southern	17,000		
		41,584	127,609	32.6
Utah	Denver & Rio Grande Western	146,009	146,009	100.0
Virginia	Chesapeake & Ohio	31,088		
	Interstate	354,769		
	Louisville & Nashville	10,330		
	Norfolk & Western	25,316		
		421,503	421,691	100.0
Washington	Northern Pacific	38,500	38,500	100.0
West Virginia	Baltimore & Ohio	112,271		
	Chesapeake & Ohio	114,921		
	New York Central	73,406		
	Norfolk & Western	173,084		
	Western Maryland	14,731		
		488,413	490,040	99.7
Kentucky and New Mexico	Louisville & Nashville; Southern Pacific	151,961	152,459	99.7
	Total railroad shipments	10,264,185		
	Total waterway shipments (Monongahela River, Pa.)	280,410	(2)	2.9
	Grand total	10,544,595	11,354,784	92.9

[1] Excess of shipments over production represents inclusion of screenings or withdrawal from stock.
[2] Figures given under respective States above.

TABLE 59.—*Beehive coke loaded for shipment on originating railroads and waterways in the United States in 1925, by routes, in net tons, as reported by the coke producers*

Route	State	Quantity		Percentage of total
		By States	Total	
Railroads:				
Baltimore & Ohio	Pennsylvania	1,103,008	1,215,279	11.5
	West Virginia	112,271		
Buffalo & Susquehanna	Pennsylvania	235,877	235,877	2.2
Buffalo, Rochester & Pittsburgh	do	68,991	68,991	.7
Central of Georgia	Georgia	4,953	4,953	(1)
Chesapeake & Ohio	Virginia	31,088	146,009	1.4
	West Virginia	114,921		
Colorado & Wyoming	Colorado	51,009	51,009	.5
Denver & Rio Grande Western	do	105,938	251,947	2.4
	Utah	146,009		
Interstate	Virginia	354,769	354,769	3.4
Ligonier Valley	Pennsylvania	131,342	131,342	1.2
Louisville & Nashville	Alabama	63,702	150,615	1.4
	Kentucky and Virginia	86,913		
Monongahela	Pennsylvania	2,594,224	2,594,224	24.6
Nashville, Chattanooga & St. Louis	Tennessee	24,584	24,584	.2
New York Central	West Virginia	73,406	73,406	.7
Norfolk & Western	Virginia	25,316	198,400	1.9
	West Virginia	173,084		
Northern Pacific	Washington	38,500	38,500	.4
Pennsylvania	Pennsylvania	4,318,842	4,318,842	41.0
Pittsburgh & Lake Erie	do	200,147	200,147	1.9
St. Louis-San Francisco	Alabama	36	36	(1)
Southern	do	314	17,314	.2
	Tennessee	17,000		
Southern Pacific	New Mexico	75,378	75,378	.7
Washington Run	Pennsylvania	97,832	97,832	.9
Western Maryland	West Virginia	14,731	14,731	.1
Total railroad shipments		10,264,185	10,264,185	97.3
Waterways: Monongahela River	Pennsylvania	280,410	280,410	2.7
Grand total		10,544,595	10,544,595	100.0

[1] Less than 0.1 per cent.

WORLD PRODUCTION

TABLE 60.—*Coke produced in the principal countries of the world, 1921–1925*[1]

[In metric tons of 2,204.6 pounds. Gas-house coke is not included]

Country	1921	1922	1923	1924	1925
Australia:					
New South Wales	601,600	244,085	589,689	573,420	619,199
Queensland	7,412	5,388	5,330	7,230	5,470
Belgium	1,402,610	2,849,884	4,179,964	4,216,580	4,111,771
Canada	861,787	605,814	1,037,985	833,691	959,438
China (exports)	35,721	45,097	29,795	27,606	19,217
Czechoslovakia	1,165,837	639,290	1,474,531	1,804,885	1,997,086
France	1,860,706	2,362,280	4,287,109	5,367,415	6,024,700
Germany[2]	29,078,013	31,022,480	14,203,569	25,100,888	28,669,631
India, British[3]	276,927	327,676	307,764	371,944	(4)
Italy	34,022	167,953	275,235	309,971	512,264
Japan:					
Japan proper—					
Natural coke	64,365	(4)	118,201	104,030	(4)
Metallurgical	668,550	720,554	658,053	832,429	849,202
Taiwan	32,000	(4)	(4)	(4)	13,409
Netherlands	228,605	451,758	671,687	975,779	1,143,806
Peru			45,000	20,000	(4)
Poland	(5)	[6]678,972	1,376,194	949,758	963,964
Rhodesia, Southern	116,316	97,670	122,897	137,078	138,339
Russia	[7]104,025	[7]112,333	(4)	[8]723,800	[8]1,350,300
Spain	446,087	311,423	651,966	724,082	861,130
Sweden	8,462	27,195	114,200	79,328	77,369
Union of South Africa	24,224	38,405	53,926	67,561	67,829
United Kingdom[9]	4,647,382	[10]9,180,765	[10]13,633,678	[10]12,958,049	[10]11,185,375
United States	22,940,425	33,678,161	51,688,879	40,160,500	46,508,345

[1] Compiled by L. M. Jones, of the Bureau of Mines.
[2] Includes all of Upper Silesia, 1921, and January–May, 1922; German Upper Silesia, June–December, 1922, and subsequent years; and the Saar all five years.
[3] Figures represent only coke made at collieries.
[4] Data not available.
[5] Included under Germany.
[6] Includes output for June–December of that part of Upper Silesia allocated to Poland.
[7] Output of the Donetz Basin.
[8] Year ended Sept. 30.
[9] In Great Britain the production of gas-house coke (including breeze), not included above, is especially important and was as follows: 1921, 6,907,608 tons; 1922, 11,037,012 tons; 1923, 11,692,948 tons; 1924, 12,279,666 tons; 1925, 12,022,759 tons.
[10] Great Britain only; data for Ireland not available.

COKE-OVEN BY-PRODUCTS

SUMMARY TABLES

TABLE 61.—*By-products obtained from coke-oven operations in the United States, 1924–25*

Product	Production	Sales		
		Quantity	Value	
			Total	Average
1924				
Tar—gallons	422,074,326	209,979,999	$9,623,520	$0.046
Ammonia:				
Sulphate—pounds	893,127,071	931,329,570	22,522,248	.024
Ammonia liquor (NH_3 content)[1]—do	49,029,524	47,665,811	4,656,428	.098
			27,178,676	
Sulphate equivalent of all forms—do	1,089,245,167	1,121,992,814		
Gas:				
Used under boilers, etc.—M cubic feet	[2]541,101,050	29,794,046	1,729,013	.058
Used in steel or affiliated plants—do		187,171,883	21,007,607	.112
Distributed through city mains—do		65,676,867	23,486,416	.358
Sold for industrial use—do		18,561,057	3,561,912	.192
		301,203,853	49,784,947	.165

[1] Includes an unknown amount of sulphate sold on the basis of NH_3 content.
[2] Includes gas wasted and gas used for heating retorts.

TABLE 61.—*By-products obtained from coke-oven operations in the United States, 1924–25*—Continued

Product	Production	Sales		
		Quantity	Value	
			Total	Average
1924				
Light oil and derivatives:				
Crude light oil ..... gallons	[3] 128,956,955	7,840,582	$652,467	$0.083
Benzol, crude ..... do	3,856,908	3,860,408	831,419	.215
Benzol, refined ..... do	14,278,117	13,880,200	2,905,237	.209
Motor benzol ..... do	73,768,811	72,921,224	11,066,652	.152
Toluol, crude ..... do	234,244	245,079	51,041	.208
Toluol, refined ..... do	2,951,187	2,986,423	718,641	.241
Solvent naphtha ..... do	4,474,220	3,884,585	724,874	.187
Other light-oil products ..... do	1,364,528	1,077,842	78,934	.073
	[4] 100,928,015	106,696,343	17,029,265	.160
Naphthalene:				
Crude ..... pounds	8,378,666	7,891,116	116,305	.015
Refined ..... do	13,302	327,957	11,903	.036
	8,391,968	8,219,073	128,208	.016
Other products	.....	.....	57,891	.....
Value of all by-products sold	.....	.....	103,802,507	.....
1925				
Tar ..... gallons	480,848,814	240,160,986	11,903,196	.049
Ammonia:				
Sulphate ..... pounds	1,017,014,550	989,676,520	22,546,908	.023
Ammonia liquor (NH_3 content) ..... do	65,255,767	54,809,335	4,966,885	.091
	.....	.....	27,513,793	.....
Sulphate equivalent of all forms ..... do	1,278,037,618	1,208,913,860	.....	.....
Gas:				
Used under boilers, etc ..... M cubic feet	[2] 639,644,062	25,239,072	1,451,253	.058
Used in steel or affiliated plants ..... do		230,030,325	26,380,657	.115
Distributed through city mains ..... do		77,457,262	29,319,309	.379
Sold for industrial use ..... do		29,527,613	4,333,000	.147
	.....	362,254,272	61,484,219	.170
Light oil and derivatives:				
Crude light oil ..... gallons	[5] 146,443,106	10,201,900	1,052,585	.103
Benzol, crude ..... do	6,119,160	5,907,106	1,321,597	.224
Benzol, refined ..... do	16,231,714	15,909,280	3,566,643	.224
Motor benzol ..... do	81,469,925	80,957,983	13,441,422	.166
Toluol, crude ..... do	127,584	46,789	10,052	.215
Toluol, refined ..... do	5,329,560	4,991,358	1,300,734	.261
Solvent naphtha ..... do	4,744,431	3,993,735	805,251	.202
Other light-oil products ..... do	2,366,246	1,252,451	96,073	.077
	[4] 116,388,620	123,260,602	21,594,357	.175
Naphthalene:				
Crude ..... pounds	9,238,890	9,692,185	92,369	.010
Refined ..... do	1,018	208,332	5,124	.025
	9,239,908	9,900,517	97,493	.010
Other products	.....	.....	132,466	.....
Value of all by-products sold	.....	.....	122,725,524	.....

[2] Includes gas wasted and gas used for heating retorts.
[3] Refined on the premises to make the derived products shown, 132,517,389 gallons of crude oil.
[4] Total gallons of derived products.
[5] Refined on the premises to make the derived products shown, 143,296,567 gallons of crude oil.

TABLE 62.—*Value of by-products and of coke, including breeze, per ton of coke produced in the United States, 1916–1925*

Product	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Ammonia and its compounds	$0.74	$0.79	$1.02	$1.06	$1.16	$0.84	$0.78	$0.84	$0.80	$0.69
Light oil and its derivatives (including naphthalene)	1.58	1.30	.99	.50	.61	.59	.55	.51	.50	.54
Surplus gas sold or used	.57	.51	.53	.66	1.05	1.31	1.35	1.37	1.46	1.54
Tar	.26	.25	.24	.28	.21	.29	.22	.25	.28	.30
Miscellaneous products	.01	.06	.09	.03	.01	.01	.01	.01	-------	-------
	3.16	2.91	2.87	2.53	3.04	3.04	2.91	2.98	3.04	3.07
Tar used	(1)	(1)	.08	.09	.22	.26	.23	.26	.29	.29
Breeze produced	.09	.10	.12	.10	.14	.16	.18	.24	.18	.22
Total value of by-products, including those not sold	3.25	3.01	3.07	2.72	3.40	3.46	3.32	3.48	3.51	3.58
Value of coke produced	3.95	6.18	[2] 7.42	[2] 6.37	[2] 10.15	[2] 5.95	[2] 6.59	[2] 6.85	[2] 5.76	[2] 5.28
Total value of coke and by-products	7.20	9.19	10.49	9.09	13.55	9.41	9.91	10.33	9.27	8.86

[1] Included in tar sold.
[2] The average receipts per ton of coke sold during these years were $7.88 in 1918, $6.58 in 1919, $10.77 in 1920, $7.72 in 1921, $8.45 in 1922, $8.53 in 1923, $6.90 in 1924, and $6.61 in 1925.

TABLE 63.—*Average receipts per unit of coke-oven by-products sold, 1913–1925*

[The figures in this table for 1913 to 1917 represent "average value of by-products produced and sold." For 1918 to 1925 they represent "average receipts from sales." The two sets of figures are probably comparable for practical purposes]

	Tar	Sulphate	Surplus gas	Benzol, refined	Motor benzol	Toluol, refined	Solvent naphtha	Naphthalene	
								Crude	Refined
Unit	Gallon	Pound	M cubic feet	Gallon	Gallon	Gallon	Gallon	Pound	Pound
	Cents	*Cents*	*Cents*	*Cents*	*Cents*		*Cents*	*Cents*	
1913	2.5	3.1	8.8	[1] 27	(2)	[1] $0.29	[1] 25	(2)	
1914	2.6	2.8	9.8	[1] 26	(2)	[1] .33	[1] 25	(2)	
1915	2.6	2.8	10.2	56.8	(3)	2.45	24	[4] 10.0	
1916	2.6	3.1	9.8	62.4	(3)	2.85	28.4	[4] 3.4	
1917	2.7	3.4	8.7	45.0	(3)	1.37	16.6	[4] 3.3	
1918	3.2	4.5	8.7	27.5	(3)	1.43	14.1	2.8	6.6
1919	3.2	3.8	8.6	20.6	(3)	.263	15.2	2.0	4.1
1920	3.7	4.3	14.0	26.0	22.7	.300	18.1	2.7	6.1
1921	4.2	2.5	16.8	23.9	17.9	.283	17.7	2.5	5.6
1922	4.0	2.5	16.7	28.5	19.1	.292	18.8	1.6	5.0
1923	4.4	2.9	16.2	24.8	16.3	.291	17.9	1.7	5.5
1924	4.6	2.4	16.5	20.9	15.2	.241	18.7	1.5	3.6
1925	4.9	2.3	17.0	22.4	16.6	.261	20.2	1.0	2.5

[1] Trade quotations, New York market; used to avoid disclosing individual operators' reports.
[2] No data.
[3] Not reported during the war.
[4] Crude and refined, not separated prior to 1918.
[5] Data uncertain.

TABLE 64.—*Average yield of coke and by-products per net ton of coal charged in by-product ovens in the United States, 1918–1925*

Product	1918	1919	1920	1921	1922	1923	1924	1925
Coke—pounds	1,410	1,402	1,395	1,376	1,390	1,386	1,386	1,398
Tar—gallons	7.1	8.1	8.2	8.8	8.0	8.1	8.6	8.4
Ammonium sulphate (or equivalent)—pounds	18.9	20.8	21.4	22.8	21.9	21.2	22.2	22.4
Light oil—gallons	2.4	2.7	[1]2.7	[1]2.8	[1]2.7	[1]2.7	[1]2.9	[1]2.9
Gas:								
Total—M cubic feet	10.4	11.6	10.8	10.8	10.8	11.1	11.0	11.2
Surplus sold or used—do	4.3	5.4	5.2	5.4	5.6	5.9	6.1	6.3
Burned in coking process—do	5.7	5.9	5.4	5.1	5.0	5.0	4.7	4.7
Wasted—do	.4	.3	.2	.3	.2	.2	.2	.2

[1]Average for plants recovering light oil.

TAR

TABLE 65.—*Disposal of coke-oven tar produced in the United States, 1924–25, in gallons*

	1924			1925		
	Furnace plants	Other plants	Total	Furnace plants	Other plants	Total
Sold	141, 125, 162	68, 854, 837	209, 979, 999	162, 633, 721	77, 527, 265	240, 160, 986
Used:						
As fuel under boilers	8, 345, 940	----------	8, 345, 940	4, 974, 364	----------	4, 974, 364
In open-hearth or other metallurgical plants	205, 128, 305	----------	205, 128, 305	228, 319, 084	----------	228, 319, 084

TABLE 66.—*Coke-oven tar produced and sold in the United States in 1925, by States*

State	Produced (gallons)		Sold			Used (gallons)			On hand Dec. 31 (gallons)
	Total	Per ton of coal coked	Gallons	Value		As fuel under boilers	In open-hearth or affiliated plants	Otherwise	
				Total	Average				
Alabama	54,820,436	8.4	30,119,739	$1,423,526	$0.047	416,906	23,478,240	334,986	2,921,622
Colorado	7,378,500	10.4					7,375,626	14,689	30,746
Illinois	33,564,649	7.9	26,883,157	1,359,303	.051		5,956,752	408	3,626,706
Indiana	40,670,988	5.9	7,962,640	427,480	.054		32,305,649		3,164,293
Maryland	9,531,241	6.9	8,898,628	(1)	(1)			42,113	1,506,218
Massachusetts	6,065,085	7.5	6,100,167	(1)	(1)				1,433,691
Michigan	18,112,583	7.4	10,884,958	570,226	.052	2,270,101	3,962,670	778,040	2,723,927
Minnesota	6,310,304	8.0	4,877,502	209,648	.043		910,968		902,376
New Jersey	10,130,380	8.1	10,130,380	(1)	(1)				258,591
New York	26,397,464	8.6	20,642,876	1,064,668	.052		4,755,421	40,022	2,575,436
Ohio	93,998,077	9.1	49,391,303	2,489,763	.050	63,941	42,263,922	25,845	6,445,287
Pennsylvania	137,170,914	9.3	32,232,601	1,301,373	.040	2,223,416	104,437,395	500	5,050,388
Tennessee	1,027,004	8.2	1,008,807	42,017	.042				47,363
Utah	3,583,500	11.3	3,583,500	(1)	(1)				
Washington	554,261	8.1	583,402	40,838	.070			1,477	14,111
West Virginia	15,604,941	10.2	12,277,982	697,983	.057		2,872,511		774,235
Kentucky, Missouri, Rhode Island, and Wisconsin	15,988,487	8.0	14,583,344	762,411	.052			3,000	2,381,806
Undistributed				1,513,960	.053				
	480,848,814	8.4	240,160,986	11,903,196	.049	4,974,364	228,319,084	1,241,080	33,856,796

[1] Included under "Undistributed."

AMMONIA

TABLE 67.—*Ammonia produced at coke-oven plants in the United States in 1925, in pounds*

State	Sulphate	Liquor (NH_3 content)	Sulphate equivalent of all forms	
			Total	Per ton of coal coked
Alabama	128,939,489	5,232,371	149,868,973	23.0
Colorado	14,625,500		14,625,500	20.7
Illinois	69,466,984	5,971,973	93,354,876	22.1
Indiana	81,242,125	9,088,357	117,595,553	17.1
Maryland	25,421,352		25,421,352	18.4
Massachusetts	13,938,000		13,938,000	17.5
Michigan	18,555,885	9,163,920	55,211,565	22.5
Minnesota	12,134,966	1,278,447	17,248,754	21.8
New Jersey	23,285,492	1,390,196	28,846,276	23.2
New York	51,411,445	3,657,780	66,042,565	21.5
Ohio	201,541,658	10,952,769	245,352,734	23.7
Pennsylvania	332,929,427	114,000	333,385,427	22.7
Tennessee	2,993,325		2,993,325	23.8
Utah	8,858,960		8,858,960	28.0
Washington		5,521,158	22,084,632	32.2
West Virginia	31,669,942	1,321,404	36,955,558	24.2
Kentucky, Missouri, Rhode Island, and Wisconsin		11,563,392	46,253,568	23.1
	1,017,014,550	65,255,767	1,278,037,618	22.4

TABLE 68.—*Ammonia sold by coke-oven plants in the United States in 1925*

State	Sulphate			Liquor (NH_3 content)			Total (sulphate equivalent of all forms)	
	Pounds	Value		Pounds	Value		Pounds	Value
		Total	Average		Total	Average		
Alabama	121,408,290	$2,935,837	$0.024	4,434,333	$452,284	$0.102	139,145,622	$3,388,121
Colorado	13,405,564	(1)	(1)				13,405,564	(1)
Illinois	65,451,010	1,585,847	.024	5,592,753	523,776	.094	87,822,022	2,109,623
Indiana	82,717,225	1,692,850	.020	8,302,042	689,036	.083	115,925,393	2,381,886
Maryland	26,179,910	(1)	(1)				26,179,910	(1)
Massachusetts	14,136,000	(1)	(1)				14,136,000	(1)
Michigan	18,736,967	506,438	.027	6,582,632	682,658	.104	45,067,495	1,189,096
Minnesota	10,396,375	235,879	.023	1,236,838	98,378	.080	15,343,727	334,257
New Jersey	23,854,029	(1)	(1)	1,390,196	(1)	(1)	29,414,813	(1)
New York	49,845,800	1,191,946	.024	3,231,870	375,503	.116	62,773,280	1,567,449
Ohio	193,264,780	4,459,482	.023	10,883,777	892,595	.082	236,799,888	5,352,077
Pennsylvania	327,013,374	6,919,638	.021	114,000	9,336	.082	327,469,374	6,928,974
Tennessee	2,950,600	72,771	.025				2,950,600	72,771
Utah	8,563,745	(1)	(1)				8,563,745	(1)
Washington				551,247	33,845	.061	2,204,988	33,845
West Virginia	31,752,851	802,947	.025	1,175,615	147,836	.126	36,455,311	950,783
Kentucky, Missouri, Rhode Island, and Wisconsin				11,314,032	947,675	.084	45,256,128	947,675
Undistributed		2,143,273	.025		113,963	.082		2,257,236
	989,676,520	22,546,908	.023	54,809,335	4,966,885	.091	1,208,913,860	27,513,793

[1] Included under "Undistributed."

TABLE 69.—*Average monthly prices of sulphate of ammonia per 100 pounds, 1910–1925*

[Quotations, 1910–1916, abstracted from Oil, Paint, and Drug Reporter, at New York; 1917–1925, from Iron Trade Review, f. o. b. producers' works. Figures for 1910–1922 compiled by C. G. Atwater, of the Barrett Co.]

	1910	1911	1912	1913	1914	1915	1916	1917
January	$2.73	$2.97½	$3.20¾	$3.28	$2.90	$2.71¼	$3.96½	$4.12
February	2.73¾	3.08¾	3.24¼	3.30	2.85	2.98¾	3.96¼	4.18
March	2.83¾	3.11¼	3.28	3.30	2.85	3.16	3.92½	(1)
April	2.77	3.11¼	3.38	3.30	2.85	3.10⅝	3.68¾	(1)
May	2.82	3.07½	3.40	3.30	2.70	3.20	3.57½	4.72½
June	2.78¾	3.03¾	3.40	3.12	2.55	3.22½	3.53	4.80
July	2.78¾	3.07¼	3.25	3.00	2.52	3.41	3.43½	4.90
August	2.79¼	3.16¼	3.22½	2.98	2.60	3.53	3.58¾	4.90
September	2.87½	3.16¼	3.29	3.07	2.76¼	3.37½	3.77½	4.92½
October	2.92½	3.18	3.28	3.10	2.67½	3.37½	4.02½	4.95
November	2.93¾	3.18	3.20⅝	3.06¼	2.67½	3.57	4.21¼	4.92½
December	2.96¼	3.20	3.22½	2.95	2.67½	3.93¾	4.32½	4.90
Average	2.83	3.11	3.28	3.14	2.71	3.30	3.83	4.73

	1918	1919	1920	1921	1922	1923	1924	1925
January	$5.03	$4.68	$4.00	$3.37½	$2.20	$3.10	$2.72½	$2.67½
February	5.22½	4.50	4.00	3.12½	2.35	3.15⅝	2.72½	2.62½
March	5.40½	4.25	4.55	2.92½	2.60½	3.19½	2.72½	2.52½
April	5.46	4.00	4.55	2.57½	2.65	3.22½	2.65	2.52½
May	5.59½	3.80	4.55	2.45	2.67	3.21½	2.62½	2.42½
June	5.10	3.60	4.55	2.45	2.72	3.13¾	2.57½	2.37½
July	4.50	3.40	4.55	2.35	2.82	3.10	2.50	2.67½
August	4.50	3.53	4.80	2.00	2.82	3.07½	2.35	2.75
September	4.50	3.53	4.80	1.95	2.90	3.02½	2.50	2.80
October	4.50	3.57	4.25	2.20	3.05	3 01¼	2.60	2.95
November	4.50	3.78	3.75	2.20	3.07	2.93¾	2.65	2.85
December	4.86	3.93	3.38	2.20	3.12	2.76¼	2.67½	2.80
Average	4.93	3.88	4.31	2.48	2.75	3.08	2.61	2.66

[1] No market.

BENZOL AND LIGHT-OIL PRODUCTS

TABLE 70.—*Producers' price per gallon of pure benzol f. o. b. works and tank-wagon price of gasoline, 1921–1925, by months*

[Prices of benzol are those quoted by Iron Trade Review; of tank-wagon gasoline, average for five cities, computed by J. E. Pogue]

Month	1921		1922		1923		1924		1925	
	Benzol	Gasoline	Benzol	Gasoline	Benzol	Gasoline	Benzol	Gasoline	Benzol	Gasoline
January	$0.330	$0.276	$0.290	$0.214	$0.300	$0.193	$0.220	$0.152	$0.250	$0.141
February	.330	.250	.290	.211	.300	.201	.250	.177	.230	.175
March	.300	.240	.290	.211	.300	.206	.250	.180	.240	.180
April	.300	.236	.290	.217	.300	.199	.250	.180	.240	.175
May	.300	.220	.290	.230	.290	.189	.250	.178	.240	.174
June	.330	.214	.290	.235	.260	.195	.245	.169	.245	.181
July	.330	.206	.300	.236	.260	.194	.250	.159	.250	.184
August	.330	.201	.300	.222	.260	.172	.250	.154	.260	.177
September	.330	.193	.300	.221	.240	.151	.250	.151	.250	.151
October	.330	.201	.300	.213	.220	.142	.250	.136	.240	.148
November	.330	.214	.300	.200	.215	.131	.250	.134	.240	.150
December	.330	.218	.300	.198	.210	.131	.250	.134	.240	.152
Average	.323	.223	.295	.217	.263	.175	.247	.159	.244	.166

TABLE 71.—*Monthly spot prices of coal-tar products in New York market, 1922–1925*

[As quoted by Oil, Paint, and Drug Reporter. Figures are averages of high and low quotations for each month]

Month	Benzol (90 per cent), per gallon				Toluol, per gallon			
	1922	1923	1924	1925	1922	1923	1924	1925
January	$0.270	$0.270	$0.210	$0.230	$0.300	$0.300	$0.260	$0.260
February	.270	.295	.230	.220	.300	.300	.260	.260
March	.270	.320	.230	.220	.300	.300	.260	.260
April	.270	.320	.230	.220	.300	.300	.260	.260
May	.270	.270	.230	.215	.300	.300	.260	.260
June	.270	.250	.230	.230	.300	.300	.260	.260
July	.270	.250	.230	.240	.300	.300	.260	.260
August	.270	.250	.230	.240	.300	.300	.260	.260
September	.270	.250	.230	.240	.300	.300	.260	.260
October	.270	.210	.230	.240	.300	.260	.260	.285
November	.270	.210	.230	.235	.300	.260	.260	.330
December	.270	.210	.230	.240	.300	.260	.260	.300
Average	.270	.259	.228	.225	.300	.290	.260	.271

Month	Solvent naphtha, per gallon				Naphthalene flakes, per pound			
	1922	1923	1924	1925	1922	1923	1924	1925
January	$0.250	$0.270	$0.270	$0.240	$0.065	$0.059	$0.065	$0.055
February	.250	.270	.280	.240	.065	.068	.063	.055
March	.250	.270	.280	.240	.062	.085	.061	.055
April	.250	.270	.280	.240	.062	.095	.055	.053
May	.250	.270	.240	.245	.061	.090	.053	.050
June	.270	.270	.240	.250	.062	.086	.050	.050
July	.270	.270	.240	.250	.061	.080	.050	.050
August	.270	.270	.240	.250	.060	.075	.050	.053
September	.270	.270	.240	.255	.060	.069	.053	.055
October	.270	.270	.240	.260	.060	.068	.045	.055
November	.270	.270	.240	.305	.059	.065	.050	.058
December	.270	.270	.240	.350	.057	.060	.055	.058
Average	.262	.270	.253	.260	.061	.075	.055	.054

TABLE 72.—*Production of motor fuel in the United States, 1918–1925, in gallons*

Year	Gasoline production of petroleum refineries	Natural-gas gasoline (total production)	Benzol produced, all grades, including motor benzol		
			Coke ovens	Gas works, including oil and water gas	Tar refineries, etc.[1]
1918	3,570,000,000	283,000,000	44,805,000	[2] 5,633,000	3,015,000
1919	3,958,000,000	352,000,000	61,068,000	[3]	1,826,000
1920	4,883,000,000	385,000,000	72,994,000	[4] 502,000	876,000
1921	5,154,000,000	450,000,000	54,459,000	[5]	2,172,000
1922	6,202,000,000	506,000,000	70,112,000	[5]	[6] 775,000
1923	7,556,000,000	816,000,000	97,335,000	[5]	[6] 395,000
1924	8,960,000,000	934,000,000	91,904,000	[5]	[6] 630,000
1925	10,903,242,000	1,127,470,000	103,820,799	[5]	[6] 742,000

[1] As reported to the U. S. Tariff Commission.
[2] Of this only 2,177,000 gallons was sold, the balance being returned to the gas.
[3] Data not available in comparable form.
[4] Quantity sold, used because of apparent double counting between production figures of crude and refined benzol.
[5] Can not be shown without disclosing individual returns.
[6] Does not include a small amount of motor benzol which can not be shown without disclosing individual returns.

TABLE 73.—*Number of plants making light oil or derivatives, 1924–25*

State	1924				1925			
	Total making coke	Making crude light oil	Making any refined product	Making motor benzol	Total making coke	Making crude light oil	Making any refined product	Making motor benzol
Alabama	7	7	5	5	8	8	6	6
Colorado	1	1	1	1	1	1	1	1
Illinois	6	4	3	2	6	4	3	2
Indiana	6	4	4	4	7	4	4	4
Kentucky	1	1			1	1		
Maryland	1	1	1	1	1	1	1	1
Massachusetts	1				2			
Michigan	5	2	2	1	5	2	1	1
Minnesota	3	2	2	2	3	2	2	2
Missouri	1	1	1		1	1	1	
New Jersey	2				2			
New York	5	5	3	3	6	6	4	4
Ohio	13	12	9	9	13	12	10	10
Pennsylvania	10	8	7	7	9	7	6	6
Rhode Island	1		1		1			
Tennessee	1	1	1	1	1	1	1	1
Utah	1	1	1	1	1	1	1	1
Washington	1				1			
West Virginia	4	4	3	2	4	4	3	2
Wisconsin	1	1	1	1	1	1	1	
	71	55	45	40	74	56	45	41

TABLE 74.—*Benzol produced and sold in the United States in 1925, by States*

State	Produced (gallons)	Sold		
		Gallons	Value	
			Total	Average
Crude benzol:				
Alabama	106, 108			
New York	3, 210, 525	3, 165, 062	$728, 700	$0. 230
Ohio	471, 727	421, 105	87, 617	. 208
Pennsylvania	1, 488, 918	1, 556, 386	340, 010	. 218
Indiana, Missouri, West Virginia, and Wisconsin	841, 882	764, 553	165, 270	. 216
	6, 119, 160	5, 907, 106	1, 321, 597	. 224
Refined benzol:				
Alabama	68, 147	66, 413	15, 467	. 233
Indiana	374, 830	362, 093	83, 874	. 232
New York	2, 917, 808	2, 762, 342	625, 192	. 226
Ohio	5, 514, 111	5, 487, 822	1, 268, 714	. 231
Pennsylvania	3, 474, 902	3, 397, 825	757, 802	. 223
West Virginia	1, 002, 837	962, 630	225, 265	. 234
Colorado, Illinois, Missouri, and Wisconsin	2, 879, 079	2, 870, 155	590, 329	. 206
	16, 231, 714	15, 909, 280	3, 566, 643	. 224
Motor benzol:				
Alabama	10, 944, 246	10, 926, 488	1, 788, 925	. 164
Colorado	762, 191	693, 832	(1)	(1)
Illinois	3, 664, 506	3, 637, 193	631, 332	. 174
Indiana	10, 367, 285	10, 222, 311	1, 681, 282	. 164
Maryland	2, 450, 354	2, 400, 966	(1)	(1)
Minnesota	734, 876	732, 436	118, 352	. 162
New York	6, 590, 738	6, 497, 691	1, 164, 576	. 179
Ohio	14, 121, 328	14, 085, 700	2, 478, 894	. 176
Pennsylvania	26, 883, 700	26, 826, 299	4, 189, 071	. 156
Tennessee	253, 924	238, 065	36, 785	. 155
West Virginia	1, 963, 977	1, 969, 145	362, 029	. 184
Michigan and Utah	2, 732, 800	2, 727, 857	433, 784	. 159
Undistributed			556, 392	. 180
	81, 469, 925	80, 957, 983	13, 441, 422	. 166

[1]Included under "Undistributed."

TABLE 75.—*Toluol and solvent naphtha produced and sold in the United States in 1925, by States*

State	Toluol (crude and refined)[1]				Solvent naphtha			
	Produced (gallons)	Sold			Produced (gallons)	Sold		
		Gallons	Value			Gallons	Value	
			Total	Average			Total	Average
Alabama	[3]	[2]	[2]	[2]	665, 118	237, 433	$37, 673	$0. 159
Colorado	80, 845	80, 845	[2]	[2]	349, 866	196, 734	[3]	[3]
Illinois	[2]	[2]	[3]	[2]	84, 586	91, 932	11, 249	. 122
Indiana	398, 268	371, 380	$92, 324	$0. 249	195, 173	189, 111	28, 931	. 153
Maryland					14, 659	8, 022	[3]	[3]
Minnesota	[2]				11, 495			
New York	1, 259, 163	1, 194, 861	318, 022	. 266	624, 979	588, 981	162, 168	. 275
Ohio	999, 125	903, 439	252, 058	. 279	1, 215, 465	1, 126, 838	239, 890	. 213
Pennsylvania	1, 993, 501	1, 825, 168	461, 481	. 253	1, 117, 111	1, 098, 232	202, 684	. 185
West Virginia	133, 281	129, 339	31, 919	. 247	206, 230	186, 176	43, 570	. 234
Combined States[4]	592, 961	533, 115	[5] 154, 982	[5] . 252	259, 749	270, 276	53, 524	. 198
Undistributed							25, 562	. 125
	5, 457, 144	5, 038, 147	1, 310, 786	. 260	4, 744, 431	3, 993, 735	805, 251	. 202

[1] Mainly refined toluol.
[2] Included under "Combined States."
[3] Included under "Undistributed."
[4] Toluol: Alabama, Illinois, Minnesota, Missouri, and Wisconsin; solvent naphtha: Missouri and Wisconsin.
[5] Includes also value of Colorado sales.

TABLE 76.—*Crude light oil produced and sold at coke-oven plants in the United States in 1925, by States*

State	Produced (gallons)	Refined on the premises (gallons)	Sold		
			Gallons	Value	
				Total	Average
Alabama	17, 288, 944	14, 652, 103	433, 327	$31, 609	$0. 073
Colorado	2, 208, 621	2, 212, 442			
Illinois	9, 369, 230	5, 948, 617	3, 226, 619	347, 487	. 108
Indiana	14, 408, 944	14, 269, 890			
Maryland	2, 982, 455	2, 991, 620			
Michigan	3, 037, 146	2, 104, 855	251, 631	16, 356	. 065
Minnesota	999, 049	999, 049			
New York	8, 238, 703	18, 662, 721	443, 774	46, 375	. 105
Ohio	32, 018, 139	27, 979, 959	3, 672, 186	376, 205	. 102
Pennsylvania	44, 026, 763	44, 039, 454	53, 030	5, 304	. 100
Tennessee	316, 975	317, 456			
West Virginia	5, 422, 062	4, 845, 062	197, 352	29, 381	. 149
Kentucky, Missouri, Utah, and Wisconsin	6, 126, 075	4, 273, 339	1, 923, 981	199, 868	. 104
	146, 443, 106	143, 296, 567	10, 201, 900	1, 052, 585	. 103

COKE-OVEN GAS

TABLE 77.—*Disposition of gas from by-product coke ovens, 1915–1925, in per cent*

Year	Wasted	Burned in coking process	Surplus sold or used (not for ovens)	Year	Wasted	Burned in coking process	Surplus sold or used (not for ovens)
1915	3.2	57.3	39.5	1921	2.9	47.4	49.7
1916	4.0	58.4	37.6	1922	1.9	45.9	52.2
1917	5.4	55.7	38.9	1923	2.1	44.9	53.0
1918	4.1	54.8	41.1	1924	2.0	42.4	55.6
1919	2.6	51.0	46.4	1925	1.8	41.6	56.6
1920	2.2	49.5	48.3				

TABLE 78.—*Trend in prices of gas per M cubic feet, 1913–1925*

Year	Average price to householders [1]		Average value of all gas sold [2]		
	Manufactured gas (44 cities)	Natural gas (8 cities)	Natural gas [3]	Coal, oil, and water gas	Coke-oven surplus gas [4]
1913	$0.95	$0.34	$0.151	[5] $0.91	$0.086
1914	.94	.34	.159	([6])	.098
1915	.93	.34	.161	.91	.102
1916	.92	.34	.160	([6])	.098
1917	.91	.35	.179	.87	.087
1918	.95	.39	.213	.91	.087
1919	1.04	.44	.216	([6])	.086
1920	1.09	.44	.246	1.06	.140
1921	1.32	.49	.264	[7] 1.21	.168
1922	1.29	.54	.291	1.16	.167
1923	1.25	.55	.238	[7] 1.11	.162
1924	1.24	.59	.222	([6])	.165
1925	1.23	.65	.223	[7] 1.10	.170

[1] Average of prices in effect on or near Apr. 15; from statistics of prices published by the Bureau of Labor Statistics. See Monthly Labor Review, August, 1926, pp. 176–178. The figures for manufactured gas are the average net price per 1,000 cubic feet when 3,000 cubic feet are purchased, which amount the Bureau of Labor Statistics estimates to be the consumption of a typical family. Similarly the figures for natural gas are the average net price per 1,000 cubic feet when 5,000 cubic feet are purchased. These figures differ slightly from those given in the corresponding table of Mineral Resources, 1924, part 2, p. 654, which related to the price for the first 1,000 cubic feet purchased.

[2] As reported by operators to the Bureau of Mines.

[3] Average value of all natural gas at point of consumption or at town border when sold to local distributing company.

[4] Includes value of gas used by producer (not for ovens)

[5] Represents 1912.

[6] No report.

[7] Average value of all gas sold by city gas plants as reported by the census of manufactures, including coke-oven gas used for city distribution

TABLE 79.—*Total production of gas fuel in the United States, 1913–1925*

[Does not include producer gas, blast-furnace gas, Pintsch gas, or acetylene]

Year	Quantity sold (billion cubic feet)				Rough equivalent in heating value (billion British thermal units)			
	1 Surplus coke-oven gas	2 Coal, oil, and water gas	3 Natural gas	4 Total	5 Surplus coke-oven gas (1×550)	6 Coal, oil, and water gas (2×575)	7 Natural gas (3×1,075)	8 Total (5+6+7)
QUANTITY								
1913	64	[1] 166	582	812	35,200	95,450	626,000	756,650
1914	61	174	592	827	33,550	100,050	636,000	769,600
1915	84	[1] 182	629	895	46,200	104,650	676,000	826,850
1916	110	196	753	1,059	60,500	112,700	810,000	983,200
1917	131	[1] 211	795	1,137	72,050	121,325	855,000	1,048,375
1918	158	234	721	1,113	86,900	134,550	775,000	996,450
1919	193	[1] 248	746	1,187	106,150	142,600	802,000	1,050,750
1920	230	262	798	1,290	126,500	150,650	858,000	1,135,150
1921	154	[2] 269	662	1,085	84,700	154,675	712,000	951,375
1922	231	257	763	1,251	127,050	147,775	820,000	1,094,825
1923	318	[3] 258	1,007	1,583	174,900	148,350	1,082,000	1,405,250
1924	301	[3] 260	1,142	1,703	165,550	149,500	1,227,000	1,542,050
1925	362	[2] 283	1,189	1,834	199,100	162,725	1,278,175	1,640,000
PER CENT								
1913	7.9	20.5	71.6	100.0	4.7	12.6	82.7	100.0
1914	7.4	21.0	71.6	100.0	4.4	13.0	82.6	100.0
1915	9.4	20.3	70.3	100.0	5.6	12.6	81.8	100.0
1916	10.4	18.5	71.1	100.0	6.2	11.5	82.3	100.0
1917	11.5	18.6	69.9	100.0	6.9	11.6	81.5	100.0
1918	14.2	21.0	64.8	100.0	8.7	13.5	77.8	100.0
1919	16.3	20.9	62.8	100.0	10.1	13.6	76.3	100.0
1920	17.8	20.3	61.9	100.0	11.1	13.3	75.6	100.0
1921	14.2	24.8	61.0	100.0	8.9	16.3	74.8	100.0
1922	18.5	20.5	61.0	100.0	11.6	13.5	74.9	100.0
1923	20.1	16.3	63.6	100.0	12.4	10.6	77.0	100.0
1924	17.7	15.3	67.0	100.0	10.7	9.7	79.6	100.0
1925	19.7	15.4	64.9	100.0	12.1	9.9	78.0	100.0

[1] Estimated by assuming a uniform rate of increase between successive years reported.
[2] Total sales of manufactured gas by city gas companies as reported by the Bureau of the Census, minus gas purchased for mixing and resale, minus sales of gas made in by-product ovens operated by city gas companies as determined by a special retabulation made by the Bureau of Mines in 1927.
[3] Estimated.

TABLE 80.—*Coke-oven gas produced and sold in the United States in 1925, by States*

State	Number of plants	Produced (M cubic feet)	Used in process (M cubic feet)	Sold or used			Wasted (M cubic feet)
				M cubic feet	Value		
					Total	Average	
Alabama	8	74,494,082	34,816,749	37,992,880	$2,674,028	$0.070	1,684,453
Colorado	1	8,327,767	3,304,835	4,978,792	[1]	[1]	44,140
Illinois	6	46,014,017	17,665,116	28,023,630	7,653,725	.273	325,271
Indiana	7	75,097,400	33,618,163	40,612,321	9,128,333	.225	866,916
Maryland	1	16,524,929	5,434,152	11,090,777	[1]	[1]	----------
Massachusetts	2	7,991,437	3,947,491	4,043,946	[1]	[1]	----------
Michigan	5	26,809,153	11,581,042	15,190,316	4,854,797	.320	37,795
Minnesota	3	8,395,544	4,255,297	4,115,783	1,295,953	.315	24,464
New Jersey	2	15,851,215	4,182,559	11,668,656	[1]	[1]	----------
New York	6	30,706,724	12,223,702	18,176,812	4,094,108	.225	306,210
Ohio	13	116,554,143	47,356,200	66,227,199	7,652,838	.116	2,970,744
Pennsylvania	9	168,037,483	68,945,204	96,694,286	10,702,786	.111	2,397,993
Tennessee	1	1,222,501	536,282	686,219	143,944	.210	----------
Utah	1	3,748,910	2,061,900	157,061	[1]	[1]	1,529,949
Washington	1	652,646	----------	630,691	816,703	1.295	21,955
West Virginia	4	17,003,135	7,288,536	8,814,408	1,200,235	.136	900,191
Kentucky, Missouri, Rhode Island, and Wisconsin	4	22,212,976	8,894,361	13,150,495	3,835,112	.292	168,120
Undistributed	----------	----------	----------	----------	7,431,657	.233	----------
	74	639,644,062	266,111,589	362,254,272	61,484,219	.170	11,278,201

[1] Included under "Undistributed."

TABLE 81.—*Disposition of gas from by-product ovens in the United States, 1920–1925*

	Millions of cubic feet	Percentage of total production	Value	
			Total	Cents per M
1920				
Used under boilers	25,430	5.3	$2,216,335	8.7
Used in steel or other related plants	151,765	31.8	14,301,095	9.4
Distributed through city mains, including sales to nonaffiliated industries	53,221	11.2	15,716,888	29.5
Total sold or used (not for ovens)	230,416	48.3	32,234,318	14.0
Used in heating ovens	235,701	49.5		
Wasted	10,368	2.2		
Total produced	476,485	100.0		
1921				
Used under boilers	12,123	3.9	1,120,087	9.2
Used in steel or other related plants	98,352	31.7	10,593,204	10.8
Distributed through city mains, including sales to nonaffiliated industries	43,826	14.1	14,249,961	32.5
Total sold or used (not for ovens)	154,301	49.7	25,963,252	16.8
Used in heating ovens	147,038	47.4		
Wasted	8,850	2.9		
Total produced	310,189	100.0		
1922				
Used under boilers	19,124	4.3	1,251,325	6.5
Used in steel or other related plants	144,976	32.7	15,942,446	11.0
Distributed through city mains	56,930	12.9	20,326,648	35.7
Sold for industrial purposes	10,353	2.3	1,104,901	10.7
Total sold or used (not for ovens)	231,383	52.2	38,625,320	16.7
Used in heating ovens	203,239	45.9		
Wasted	8,049	1.9		
Total produced	442,671	100.0		
1923				
Used under boilers	33,741	5.6	1,820,808	5.4
Used in steel or other related plants	200,099	33.3	22,646,134	11.3
Distributed through city mains	65,143	10.8	23,116,578	35.5
Sold for industrial purposes	19,459	3.3	4,025,700	20.7
Total sold or used (not for ovens)	318,442	53.0	51,609,220	16.2
Used in heating ovens	270,168	44.9		
Wasted	12,545	2.1		
Total produced	601,155	100.0		
1924				
Used under boilers	29,794	5.5	1,729,013	5.8
Used in steel or other related plants	187,172	34.6	21,007,607	11.2
Distributed through city mains	65,677	12.1	23,486,416	35.8
Sold for industrial purposes	18,561	3.4	3,561,911	19.2
Total sold or used (not for ovens)	301,204	55.6	49,784,947	16.5
Used in heating ovens	229,298	42.4		
Wasted	10,599	2.0		
Total produced	541,101	100.0		
1925				
Used under boilers	25,239	3.9	1,451,253	5.8
Used in steel or other related plants	230,030	36.0	26,380,657	11.5
Distributed through city mains	77,457	12.1	29,319,309	37.9
Sold for industrial purposes	29,528	4.6	4,333,000	14.7
Total sold or used (not for ovens)	362,254	56.6	61,484,219	17.0
Used in heating ovens	266,112	41.6		
Wasted	11,278	1.8		
Total produced	639,644	100.0		

TABLE 82.—*Use of by-product gas in the United States, 1924–25, by States*

State	Used under boilers			Used in steel or other affiliated plants			Distributed through city mains			Sold for industrial purposes		
	M cubic feet	Value		M cubic feet	Value		M cubic feet	Value		M cubic feet	Value	
		Total	Average		Total	Average		Total	Average		Total	Average
1924												
Alabama	14,835,325	$717,067	$0.048	16,446,973	$1,296,493	$0.079	1,640,923	$247,557	$0.151	3,124,359	$225,776	$0.072
Colorado				5,282,923	(1)	(1)				8,115	(1)	(1)
Illinois	4,880,365	126,926	.026	3,699,203	493,078	.133	12,596,469	4,122,479	.327	1,429,947	322,609	.226
Indiana	788,603	92,185	.117	24,809,210	3,675,044	.148	5,198,844	2,924,824	.563	1,103,204	393,785	.357
Maryland				3,260,767	(1)	(1)	4,938,135	(1)	(1)			
Massachusetts							3,193,939	(1)	(1)			
Michigan	2,202	677	.307	4,095,929	1,101,341	.269	9,448,412	3,255,383	.345	243,290	169,943	.699
Minnesota	57,092	6,510	.114	418,202	89,547	.214	3,499,920	1,259,767	.360			
New Jersey							11,374,709	(1)	(1)			
New York	1,964,498	121,758	.062	8,570,771	668,738	.078	978,564	321,971	.329	876,787	877,457	1.001
Ohio	4,210,052	487,429	.116	33,328,035	4,470,441	.117	846,000	296,100	.350	8,304,086	712,242	.086
Pennsylvania	1,373,541	112,735	.082	76,598,222	7,806,182	.102	3,453,395	873,866	.253	10,590	803	.076
Tennessee	103,464	3,621	.035				500,689	125,173	.250			
Utah							5,105	(1)	(1)	63,255	(1)	(1)
Washington	3,337	2,804	.840				632,615	841,233	1.330			
West Virginia	25,000	1,805	.072	5,661,618	457,044	.081				2,913,735	786,708	.270
Kentucky, Missouri, Rhode Island, and Wisconsin	1,541,567	55,496	.036				7,369,148	3,404,802	.462	483,689	62,256	.129
Undistributed					949,609	.111		5,813,261	.298		10,341	
	23,704,046	1,729,013	.058	187,171,883	21,007,607	.112	65,676,867	23,486,416	.358	18,561,057	3,561,911	.192

[1] Included under "Undistributed."

TABLE 82.—*Use of by-product gas in the United States, 1924–25, by States*—Continued

State	Used under boilers			Used in steel or other affiliated plants			Distributed through city mains			Sold for industrial purposes		
	M cubic feet	Value		M cubic feet	Value		M cubic feet	Value		M cubic feet	Value	
		Total	Average		Total	Average		Total	Average		Total	Average
1925												
Alabama	15,085,585	$726,477	$0.048	17,506,803	$1,368,569	$0.078	1,822,022	$274,716	$0.151	3,578,470	$304,266	$0.081
Colorado				4,978,792	(1)	(1)						
Illinois	184,384	12,201	.066	5,606,469	695,722	.132	17,304,421	5,811,466	.336	4,928,356	1,134,336	.230
Indiana	583,347	57,765	.099	31,521,238	4,506,695	.143	4,379,352	3,729,119	.851	4,128,384	834,754	.202
Maryland				5,635,321	(1)	(1)	5,455,456	(1)	(1)			
Massachusetts							4,043,946	(1)	(1)			
Michigan	4,964	248	.050	4,306,336	1,077,356	.25	10,614,914	3,606,550	.340	264,102	170,643	.646
Minnesota	108,162	10,591	.098	652,493	89,955	.138	3,355,128	1,195,407	.356			
New Jersey							11,668,656	(1)	(1)			
New York	1,840,822	113,794	.062	12,476,685	1,277,654	.102	3,113,537	2,614,892	.840	745,768	87,768	.118
Ohio	2,708,939	251,525	.093	50,751,306	5,937,946	.117	1,940,160	538,689	.278	10,826,794	924,678	.085
Pennsylvania	2,150,941	148,719	.069	90,436,838	9,719,036	.108	3,987,351	814,612	.204	119,156	20,419	.171
Tennessee	128,423	4,495	.035				557,796	139,449	.25			
Utah							53,100	(1)	(1)	103,961	(1)	(1)
Washington	3,594	2,836	.789				627,097	813,867	1.30			
West Virginia	29,603	2,087	.070	6,158,044	489,141	.079				2,626,761	709,007	.270
Kentucky, Missouri, Rhode Island, and Wisconsin	2,410,308	120,515	.050				8,534,326	3,580,463	.420	2,205,861	134,134	.061
Undistributed					1,218,583	.115		6,200,079	.292		12,995	.125
	25,239,072	1,451,253	.058	230,030,325	26,380,657	.115	77,457,262	29,319,309	.379	29,527,613	4,333,000	.147

[1] Included under "Undistributed."

TABLE 83.—*Yield and disposal of gas, and number of plants supplying gas for certain uses, 1924–25*

State	Yield of gas (M cubic feet) per ton of coal coked	Disposal (per cent of total)						Number of plants	
		In coke plants		To steel or other affiliated plants	For distribution through city mains	For industrial purposes	Wasted	Supplying gas for city distribution	Supplying gas to steel or other affiliated plants
		For use in heating coke ovens	For use under boilers						
1924									
Alabama	11.2	46.4	20.7	23.0	2.3	4.4	3.2	2	3
Colorado	11.8	39.4		59.5		.1	1.0		1
Illinois	11.1	39.9	13.0	9.8	33.4	3.8	.1	5	2
Indiana	10.7	46.7	1.3	39.7	8.3	1.8	2.2	5	3
Maryland	9.8	24.0		30.2	45.8			1	1
Massachusetts	10.1	44.9			55.1			1	
Michigan	10.8	46.9		15.7	36.3	.9	.2	5	1
Minnesota	11.3	50.9	.7	4.9	41.5		2.0	2	1
New Jersey	11.6	18.4			81.6			2	
New York	10.2	45.1	8.5	37.1	4.2	3.8	1.3	1	2
Ohio	11.4	43.5	4.4	39.9	.9	8.6	2.7	1	8
Pennsylvania	11.0	40.1	1.0	55.3	2.5		1.1	4	8
Tennessee	13.0	45.0	7.7		37.3		10.0	1	
Washington	9.4		.5		94.6		4.9	1	
West Virginia	11.2	42.0	.2	33.9		17.4	6.5		2
Kentucky, Missouri, Rhode Island, Utah, and Wisconsin	10.8	45.6	8.0		38.5	2.9	5.0	4	
	11.0	42.4	5.5	34.6	12.1	3.4	2.0	35	32
1925									
Alabama	11.4	46.7	20.3	23.5	2.4	4.8	2.3	2	3
Colorado	11.8	39.7		59.8			.5		1
Illinois	10.9	38.4	.4	12.2	37.6	10.7	.7	4	2
Indiana	10.9	44.8	.8	42.0	5.8	5.5	1.1	5	4
Maryland	11.9	32.9		34.1	33.0			1	1
Massachusetts	10.0	49.4			50.6			2	
Michigan	10.9	43.2		16.1	39.6	1.0	.1	5	2
Minnesota	10.6	50.7	1.3	7.8	39.9		.3	2	1
New Jersey	12.8	26.4			73.6			2	
New York	10.0	39.9	6.0	40.6	10.1	2.4	1.0	4	3
Ohio	11.3	40.6	2.3	43.5	1.7	9.3	2.6	3	8
Pennsylvania	11.4	41.0	1.3	53.8	2.4	.1	1.4	5	7
Tennessee	9.7	43.9	10.5		45.6			1	
Utah	11.9	55.0			1.4	2.8	40.8	1	
Washington	9.5		.5		96.1		3.4	1	
West Virginia	11.1	42.9	.2	36.2		15.4	5.3		2
Kentucky, Missouri, Rhode Island, and Wisconsin	11.1	40.0	10.9		38.4	9.9	.8	3	
	11.2	41.6	3.9	36.0	12.1	4.6	1.8	41	34

NAPHTHALENE

TABLE 84.—*Total commercial production of naphthalene from all sources in the United States, 1918–1925*

[Total sales are shown for coke plants and gas works to avoid double counting in production of crude and refined]

	By-product coke ovens; sales of crude and refined	City gas works; sales of crude and refined	Tar distilleries and all other establishments	Total commercial production
Quantity (pounds):				
1918	15,890,447	896,080	40,138,092	56,924,619
1919	6,702,040	(1)	12,612,203	20,114,243
1920	14,448,762	1,760,293	26,393,411	42,602,466
1921	1,983,523	(1)	16,949,464	19,432,987
1922	4,887,935	(1)	19,323,393	25,411,328
1923	11,245,633	1,115,563	41,453,002	53,814,198
1924	8,219,073	(1)	34,683,803	44,102,876
1925	9,900,517	1,266,037	34,135,175	45,301,729
Value:				
1918	$650,229	$14,282	$1,281,440	$1,945,951
1919	191,364	(1)	327,201	542,565
1920	487,974	63,449	791,403	1,342,826
1921	59,335	(1)	380,167	462,502
1922	131,252	(1)	352,957	536,209
1923	239,699	42,247	652,148	934,094
1924	128,208	(1)	441,333	602,541
1925	97,493	34,751	519,773	652,017

	Imports of crude (free) [2]	Imports of refined (dutiable) [2]	Total imports [2]	Total produced and imported	Average spot price of flake in New York (cents per pound)
Quantity (pounds):					
1918	3,902,731	2,795	3,905,526	60,830,145	----------
1919	3,239,256	7,650	3,246,906	23,361,149	----------
1920	15,012,096	3,697,562	18,709,658	61,312,124	----------
1921	4,495,806	441,685	4,937,491	24,370,478	----------
1922	3,144,332	75,680	3,220,012	28,631,340	----------
1923	20,992,439	9,605	21,002,044	74,816,242	----------
1924	5,266,708	4,549	5,271,257	49,374,133	----------
1925	1,979,612	----------	1,979,612	47,281,341	----------
Value:					
1918	$130,098	$171	$130,269	$2,076,220	9.9
1919	92,265	384	92,649	635,214	7.6
1920	530,219	416,172	946,391	2,289,217	12.7
1921	135,943	31,458	167,401	629,903	7.2
1922	54,029	7,684	61,713	597,922	6.1
1923	575,563	194	575,757	1,509,851	7.5
1924	96,491	1,147	97,638	700,179	5.5
1925	26,593	----------	26,593	678,610	5.4

[1] Data lacking or incomplete. Estimate included in total.
[2] Imports entered for consumption as reported by Tariff Commission.

TABLE 85.—*Naphthalene sold by by-product coke operators, 1916–1925*

Year	Quantity (pounds)			Value	Average receipts per pound (cents)		Receipts per ton of coke (cents)
	Crude	Refined	Total		Crude	Refined	
1916	(1)	(1)	8,820,405	$289,688	3.4		1.5
1917	(1)	(1)	17,276,044	569,449	3.3		2.5
1918	10,403,758	5,486,689	15,890,447	650,229	2.8	6.6	2.5
1919	4,038,455	2,663,585	6,702,040	191,364	2.0	4.1	.8
1920	11,507,703	2,941,059	14,448,762	487,974	2.7	6.1	1.6
1921	1,652,466	331,057	1,983,523	59,335	2.5	5.6	.3
1922	3,298,851	1,589,084	4,887,935	131,252	1.6	5.0	.5
1923	10,047,427	1,198,206	11,245,633	239,699	1.7	5.5	.6
1924	7,891,116	327,957	8,219,073	128,208	1.5	3.6	.4
1925	9,692,185	208,332	9,900,517	97,493	1.0	2.5	.2

[1] Not separately reported.

PRODUCTION OF COKE, 1880-1925, BY STATES

TABLE 86.—*Coke produced in the United States, 1880–1925, by States, in net tons*

Year	Alabama	Colorado	Georgia	Illinois	Indiana	Kansas	Kentucky	Maryland	Massachusetts	Michigan	Minnesota	Missouri	Montana	New Jersey	New Mexico
1880	60,781	25,568	38,041	12,700	----------	3,070	4,250	----------	----------	----------	----------	----------	----------	----------	----------
1881	109,033	48,587	41,376	14,800	----------	5,670	4,370	----------	----------	----------	----------	----------	----------	----------	----------
1882	152,940	102,105	46,602	11,400	----------	6,080	4,070	----------	----------	----------	----------	----------	----------	----------	1,060
1883	217,531	133,997	67,012	13,400	----------	8,430	5,025	----------	----------	----------	----------	----------	----------	----------	3,905
1884	244,009	115,719	79,268	13,095	----------	7,190	2,223	----------	----------	----------	----------	----------	75	----------	18,282
1885	301,180	131,960	70,669	10,350	----------	8,050	2,704	----------	----------	----------	----------	----------	175	----------	17,940
1886	375,054	142,797	82,680	8,103	6,124	12,493	4,528	----------	----------	----------	----------	----------	----------	----------	10,236
1887	325,020	170,698	79,241	9,198	17,658	14,950	14,565	----------	----------	----------	----------	2,970	7,200	----------	13,710
1888	508,511	179,682	83,721	7,410	11,956	1-,831	23,150	----------	----------	----------	----------	2,600	12,000	----------	8,540
1889	1,030,510	187,638	94,727	11,583	8,301	13,910	13,021	----------	----------	----------	----------	5,275	14,043	----------	3,460
1890	1,072,942	245,756	102,233	5,000	6,013	12,311	12,343	----------	----------	----------	----------	6,136	14,427	----------	2,050
1891	1,282,496	277,074	103,057	5,200	3,798	14,174	33,777	----------	----------	----------	----------	6,872	29,009	----------	2,300
1892	1,501,571	[1] 373,229	81,807	3,170	3,207	9,132	36,123	----------	----------	----------	----------	7,299	34,557	----------	----------
1893	1,168,085	[1] 362,986	90,726	2,200	5,724	8,565	48,619	----------	----------	----------	----------	5,905	20,945	----------	5,803
1894	923,817	[1] 317,196	93,029	2,200	6,551	8,439	29,748	----------	----------	----------	----------	2,250	17,388	----------	6,529
1895	1,444,339	[1] 340,357	60,212	2,250	4,804	5,287	25,460	----------	----------	----------	----------	2,028	25,337	----------	14,663
1896	1,479,437	[1] 363,760	53,673	2,600	4,353	4,785	27,107	----------	----------	----------	----------	2,500	60,078	----------	24,228
1897	1,443,017	[1] 342,653	33,000	1,549	2,904	6,181	32,117	----------	----------	----------	----------	2,593	67,849	----------	1,438
1898	1,663,020	[1] 474,808	49,529	2,325	1,825	4,180	22,242	----------	----------	----------	----------	740	52,009	----------	6,980
1899	1,787,809	[1] 530,424	50,907	[2] 2,370	([2])	14,476	81,095	----------	([3])	----------	----------	2,860	56,376	----------	44,134
1900	2,110,837	[1] 618,755	73,928	([4])	([4])	5,948	95,532	----------	([4])	([4])	----------	2,087	54,731	----------	44,774
1901	2,148,911	[1] 671,303	54,550	([4])	([4])	7,138	100,285	----------	([4])	([4])	----------	4,749	57,004	----------	41,643
1902	2,552,246	[1] 1,003,393	82,064	([4])	([4])	20,902	126,879	----------	([4])	([4])	----------	5,780	58,463	----------	23,296
1903	2,693,497	[1] 1,053,840	85,546	([1])	([4])	14,194	115,362	([4])	([4])	([4])	----------	1,839	45,107	([1])	11,050
1904	2,340,219	[1] 789,060	75,812	4,439	([4])	9,460	64,112	([4])	([4])	([4])	([4])	2,446	41,497	([1])	58,259
1905	2,576,986	[1] 1,378,824	70,593	10,307	----------	4,425	79,487	([4])	([4])	([4])	([4])	1,580	31,182	([4])	89,638
1906	3,034,501	[1] 1,455,905	70,280	268,693	----------	1,698	74,064	([4])	([4])	([4])	([4])	----------	38,182	([4])	147,747
1907	3,021,794	[1] 1,421,579	74,934	372,697	----------	6,274	67,068	332,253	466,458	([4])	([4])	----------	40,714	256,057	265,125
1908	2,362,666	[1] 982,291	39,422	362,182	([4])	2,497	37,827	270,916	453,883	([4])	([4])	----------	([4])	248,893	274,565
1909	3,085,824	[1] 1,251,805	46,385	1,276,956	([4])	----------	46,371	315,587	444,349	([4])	([4])	----------	([4])	261,460	373,967
1910	3,249,027	[1] 1,346,211	43,814	1,514,504	([4])	([4])	53,857	335,373	450,001	([4])	([4])	----------	([4])	250,153	401,646
1911	2,761,521	[1] 1,177,023	37,553	1,610,212	([4])	([4])	66,099	343,451	477,564	([4])	([4])	----------	([4])	255,334	381,927
1912	2,975,489	972,941	43,158	1,764,944	2,616,339	([4])	191,555	304,715	511,596	([4])	([4])	----------	----------	304,715	413,906
1913	3,323,664	879,461	42,747	1,859,553	2,727,025	----------	317,084	236,423	531,384	([4])	([4])	----------	----------	255,792	467,945
1914	3,084,149	666,083	24,517	1,425,168	2,276,652	----------	443,959	87,852	540,631	([4])	([4])	----------	----------	255,283	362,572
1915	3,071,811	670,938	20,039	1,686,998	2,768,099	----------	526,097	313,283	504,438	([4])	127,847	([4])	----------	269,448	389,411
1916	4,298,417	1,053,553	47,127	2,320,400	3,489,660	----------	802,526	489,982	563,048	([4])	431,329	([4])	----------	210,766	502,812
1917	4,892,589	1,112,449	39,589	2,289,833	3,540,718	----------	863,071	518,810	595,113	([4])	490,272	([4])	----------	423,361	577,679
1918	4,352,172	989,447	22,048	2,285,610	3,898,215	----------	818,785	474,368	556,397	([4])	784,065	([4])	----------	682,148	597,672
1919	3,380,771	613,753	18,149	1,703,903	3,702,180	----------	691,969	356,237	393,331	808,729	586,094	([4])	----------	788,465	260,162

See footnotes at end of table.

TABLE 86.—*Coke produced in the United States, 1880–1925, by States, in net tons*—Continued

Year	Alabama	Colorado	Georgia	Illinois	Indiana	Kansas	Kentucky	Maryland	Massachusetts	Michigan	Minnesota	Missouri	Montana	New Jersey	New Mexico
1920	4,013,891	789,499	16,523	2,136,793	4,553,697	----------	739,577	682,132	488,089	1,393,445	674,801	(4)	----------	725,571	(4)
1921	2,534,039	368,131	6,943	1,322,178	3,091,263	----------	284,825	292,439	294,059	777,125	435,866	(4)	----------	759,768	(4)
1922	3,799,865	484,039	8,832	1,982,906	3,995,565	----------	487,167	589,893	407,081	1,142,059	462,044	(4)	----------	790,811	87,631
1923	4,654,075	647,823	12,556	3,187,168	5,042,614	----------	559,711	861,668	554,125	1,648,773	695,824	(4)	----------	897,569	(4)
1924	4,541,058	735,520	8,081	2,355,474	4,272,435	----------	(4)	810,118	397,640	1,770,547	514,764	(4)	----------	869,120	83,070
1925	4,670,481	644,481	4,925	3,011,497	5,141,940	----------	(4)	1,019,209	535,302	1,751,118	518,355	(4)	----------	903,997	(4)

Year	New York	Ohio	Oklahoma (Indian Territory)	Pennsylvania	Rhode Island	Tennessee	Texas	Utah	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Combined States	Total
1880	----------	100,596	1,546	2,821,384	----------	130,609	----------	1,000	----------	----------	138,755	----------	----------	----------	3,338,300
1881	----------	119,469	1,768	3,437,708	----------	143,853	----------	----------	----------	----------	187,126	----------	----------	----------	4,113,760
1882	----------	103,722	2,625	3,945,034	----------	187,695	----------	250	----------	----------	230,398	----------	----------	----------	4,793,321
1883	----------	87,834	2,573	4,438,464	----------	203,691	----------	----------	25,340	----------	257,519	----------	----------	----------	5,464,721
1884	----------	62,709	1,912	3,822,128	----------	219,723	----------	----------	63,600	400	223,472	----------	----------	----------	4,873,805
1885	----------	39,416	3,584	3,991,805	----------	218,842	----------	----------	49,139	311	260,571	----------	----------	----------	5,106,696
1886	----------	34,932	6,351	5,406,597	----------	368,139	----------	----------	122,352	825	264,158	----------	----------	----------	6,845,369
1887	----------	93,004	10,060	5,832,849	----------	396,979	----------	----------	166,947	14,625	442,031	----------	----------	----------	7,611,705
1888	----------	67,194	7,502	6,545,779	----------	385,693	----------	----------	149,199	----------	531,762	500	----------	----------	8,540,030
1889	----------	75,124	6,639	7,059,055	----------	359,710	----------	761	146,528	3,841	607,880	16,016	----------	----------	10,258,022
1890	----------	74,633	6,639	8,560,245	----------	348,728	----------	8,528	165,847	5,837	833,377	24,976	----------	----------	11,508,021
1891	----------	38,718	9,464	6,954,846	----------	364,318	----------	7,949	167,516	6,000	1,009,051	34,387	2,682	----------	10,352,688
1892	----------	51,818	3,569	8,327,612	----------	354,096	----------	(1)	147,912	7,177	1,034,750	33,800	----------	----------	12,010,829
1893	12,850	22,436	7,135	6,229,051	----------	265,777	----------	(1)	125,092	6,731	1,062,076	14,958	2,916	----------	9,477,580
1894	16,500	32,610	3,051	6,063,777	----------	292,646	----------	(1)	180,091	5,245	1,193,933	4,250	4,352	----------	9,203,632
1895	18,521	29,050	5,175	9,404,215	----------	396,790	286	(1)	244,738	15,129	1,285,206	4,972	4,895	----------	13,333,714
1896	(2)	80,868	21,021	[5] 7,356,502	----------	339,202	----------	(1)	268,081	25,949	1,649,755	5,332	19,542	----------	11,788,773
1897	(3)	95,087	30,364	[5] 8,966,924	----------	368,769	394	(1)	354,067	26,189	1,472,666	17,216	24,007	----------	13,288,984
1898	(3)	85,535	34,110	[5] 10,715,302	----------	394,545	----------	(1)	531,161	30,197	1,925,071	35,289	18,350	----------	16,047,209
1899	(3)	83,878	24,339	[5] 13,577,870	----------	425,308	----------	(1)	618,707	30,372	2,278,577	33,437	15,630	----------	19,668,569
1900	(4)	72,116	38,141	13,357,295	----------	475,432	----------	(1)	685,156	33,387	2,358,499	(4)	(4)	506,730	20,533,348
1901	(4)	108,774	37,374	14,355,917	----------	404,017	----------	(1)	907,130	49,197	2,283,700	(4)	(4)	564,191	21,795,883
1902	(4)	146,099	49,441	16,497,910	----------	560,006	----------	(1)	1,124,572	40,305	2,516,505	(4)	(4)	598,869	25,401,730
1903	(4)	143,913	49,818	15,650,932	----------	546,875	----------	(1)	1,176,439	45,623	2,707,818	(4)	(4)	932,428	25,274,281
1904	(4)	109,284	44,808	14,861,064	----------	379,240	----------	(1)	1,101,716	45,432	2,283,086	(4)	(4)	1,451,172	23,661,106
1905	(4)	277,130	54,781	20,573,736	----------	468,092	----------	(1)	1,499,481	53,137	3,400,593	(4)	(4)	1,660,857	32,231,129
1906	(4)	293,994	49,782	23,060,511	----------	483,123	----------	(1)	1,577,659	45,642	3,713,514	(4)	(4)	2,085,617	36,401,217
1907	385,478	270,634	19,089	26,513,214	----------	467,499	----------	(1)	1,545,280	52,028	4,112,896	(4)	----------	1,088,493	40,779,564
1908	473,569	159,578	2,944	15,511,634	----------	214,528	----------	(1)	1,162,051	38,889	2,637,123	(4)	----------	798,060	26,033,518

1909	523,551	222,711	(4)	24,905,525		261,808		(1)	1,347,478	42,981	3,943,948	(4)		964,359	39,315,065
1910	652,459	282,315	(4)	26,315,607		322,756		(1)	1,493,655	59,337	3,803,850	(4)		1,134,245	41,708,810
1911	686,172	311,382		21,923,935		330,418		(1)	910,411	40,180	2,291,049	(4)		1,947,258	35,551,489
1912	794,618	388,669		27,438,693		370,076		(4)	967,947	49,260	2,465,986	(4)		1,408,992	43,983,599
1913	758,486	351,846		28,753,444		364,578		(4)	1,303,603	76,221	2,472,752	(4)		1,577,522	46,299,530
1914	457,370	521,638		20,258,393		264,127		(4)	780,984	84,923	1,427,962	(4)		1,593,651	34,555,914
1915	684,461	684,658		25,622,862		256,973		(4)	629,807	136,552	1,391,446	(4)		1,825,982	41,581,150
1916	775,014	1,803,268		31,279,695		382,175		(7)	1,242,332	[7] 534,653	2,521,309	(4)		1,785,529	54,533,585
1917	993,184	3,694,302		27,912,025		411,326		(7)	1,304,230	[7] 497,533	3,349,761	(4)		2,100,983	55,606,828
1918	1,069,587	5,365,243	(4)	26,723,645		427,106		(4)	1,234,256	123,788	3,320,006	(4)		2,754,414	56,478,372
1919	751,067	5,481,660	(4)	20,501,831	(4)	260,915		(4)	930,516	62,546	1,413,932	(4)		1,474,347	44,180,557
1920	1,040,192	5,701,810		23,638,739	(4)	301,708		(4)	1,027,788	59,395	1,828,336	(4)		1,533,057	51,345,043
1921	746,916	3,028,423		9,769,476	(4)	85,728		(4)	280,476	27,260	397,892	(4)		804,815	25,287,622
1922	1,494,992	5,011,138		13,991,892	(4)	113,896		172,453	378,656	31,674	919,744	(4)		771,734	37,124,012
1923	1,783,948	6,473,606	(4)	25,624,286	(4)	304,511		232,941	774,887	69,068	1,762,775	(4)		1,189,606	56,977,534
1924	1,600,669	5,832,699		16,927,437	(4)	207,475		257,094	485,064	71,615	1,328,569	(4)		1,201,156	44,269,605
1925	2,219,409	7,261,187		19,427,603	(4)	216,488		314,159	421,691	79,257	1,546,032	(4)		1,579,812	51,266,943

[1] Utah included with Colorado.
[2] Indiana included with Illinois.
[3] Included with Pennsylvania.
[4] Included under "Combined States."
[5] Includes New York.
[6] Includes Massachusetts and New York.
[7] Utah included with Washington.

BY-PRODUCT COKE OVENS OWNED BY CITY GAS COMPANIES INCLUDED BY THE BUREAU OF THE CENSUS IN THE MANUFACTURED-GAS INDUSTRY

Reference has already been made (pages 537 and 538) to the group of by-product coke plants, installed by city gas companies, which the Bureau of the Census classifies as a part of the "Manufactured-gas industry" and which the Bureau of Mines includes with the by-product coke industry.

The difference in classification is maintained by the two offices advisedly, in the interest of those who use the statistics. For some purposes the census grouping is the most useful and for others, particularly the design of ovens, technique of manufacture, and the supply and demand for coal and coke, the grouping used by the Bureau of Mines is the more significant.

To compare or combine the two sets of figures, however, it is necessary to allow for the difference in classification. This allowance can be done by means of the data in the following tables prepared for the purpose by the Bureau of Mines. The tables show in parallel columns separate figures for the group of by-product coke plants operated by city gas companies (grouped by the census with the manufactured-gas industry) and for all other by-product coke plants. Thus in 1925 there were 13 plants in the group owned by city gas companies and they produced 1,125,169 tons of coke, 18,236,480,000 cubic feet of gas, 13,504,284 gallons of tar, 8,764,684 pounds of ammonia (NH_3 equivalent of all forms), and 1,157,219 gallons of light oil. By subtracting these quantities from the census returns for manufactured gas in 1925, anyone interested may obtain the quantities of the several products produced by gas works proper; i. e., coal, oil, and water gas plants.

The table also shows the operations of the 61 plants not owned by city gas companies, which produced 38,786,990 tons of coke in 1925, and 621,407,582,000 cubic feet of gas, 467,344,530 gallons of tar, 310,744,721 pounds of NH_3, and 145,285,887 gallons of crude light oil. This is the group of plants covered by the census classification of "Coke, not including gas-house coke, made in by-product ovens." The figures were compiled by the Bureau of Mines from the reports of the coke producers and are accepted by the Bureau of the Census as its record of production.

The totals for both groups of plants given in the last column of the table are the figures for the by-product coke industry as defined by the Bureau of Mines and given in the other tables of this report.

Corresponding figures, here published for the first time, are given for each year back to 1918. Table 87 is a summary of the relative proportions of the two groups of plants for the last eight years.

TABLE 87.—*Summary of operations of by-product plants owned by city gas companies and of all other by-product coke plants, 1918–1925*

[The plants owned by city gas companies are included by the Bureau of the Census in the manufactured gas industry]

Year	Plants not owned by city gas companies					Plants owned by city gas companies (public utilities)				
		Coke produced		Surplus gas [1]			Coke produced		Surplus gas [1]	
	Number of plants	Net tons	Per cent of total by-product coke	M cubic feet	Per cent of total surplus gas	Number of plants	Net tons	Per cent of total by product coke	M cubic feet	Per cent of total surplus gas
1918	51	24, 919, 395	95. 9	150, 908, 288	95. 3	9	1, 078, 185	4. 1	7, 450, 191	4. 7
1919	56	23, 894, 658	95. 1	183, 468, 750	95. 1	9	1, 242, 963	4. 9	9, 355, 344	4. 9
1920	59	29, 637, 341	96. 1	221, 032, 497	95. 9	9	1, 196, 610	3. 9	9, 383, 422	4. 1
1921	60	19, 045, 898	96. 4	148, 166, 088	96. 0	7	703, 682	3. 6	6, 134, 910	4. 0
1922	57	27, 889, 475	97. 7	226, 152, 451	97. 7	7	661, 070	2. 3	5, 230, 567	2. 3
1923	58	36, 637, 455	97. 4	310, 789, 918	97. 6	7	960, 209	2. 6	7, 652, 336	2. 4
1924	60	33, 072, 640	97. 3	292, 368, 617	97. 1	11	910, 928	2. 7	8, 835, 236	2. 9
1925	61	88, 786, 990	97. 2	350, 178, 112	96. 7	13	1, 125, 169	2. 8	12, 076, 160	3. 3

[1] Surplus gas sold, exclusive of a small amount wasted.

TABLE 88.—*Production of coke, breeze, gas, and by-products at by-product coke plants owned by city gas companies (public utilities) and included by the Bureau of the Census in the manufactured-gas industry, and at all other by-product coke plants, 1918–1925*

Product	1918			1919		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total
Total value	$252,780,851	$14,824,920	$267,605,771	$207,054,058	$16,918,500	$223,972,558
Number of plants	51	9	60	56	9	65
Coke:						
Production—net tons	24,919,395	1,078,185	25,997,580	23,894,658	1,242,963	25,137,621
Value	$184,226,317	$8,792,468	$193,018,785	$151,048,383	$9,196,385	$160,244,768
Average value	$7.39	$8.15	$7.42	$6.32	$7.32	$6.37
Screenings and breeze:						
Production—net tons	1,894,834	104,536	1,999,370	1,494,859	353,688	1,848,547
By-products:						
Gas—						
Production—M cu. ft	369,528,925	15,506,229	385,035,154	360,419,351	55,235,747	415,655,098
Sales of surplus—						
For illuminating and household purposes—						
Quantity—M cu. ft	26,835,388	6,602,603	33,437,991	3,636,775	1,601,711	5,238,486
Value	$3,473,154	$3,656,959	$7,130,113	$250,667	1,856,139	$2,106,806
For industrial purposes—						
Quantity—M cu. ft	124,072,900	847,588	124,920,488	137,975,912	145,095	138,121,007
Value	$6,114,851	$454,551	$6,569,402	$7,961,986	$116,456	$8,078,442
To public service corporations—						
Quantity—M cu. ft	[2]	[2]	[2]	41,856,063	7,608,538	49,464,601
Value	[2]	[2]	[2]	$2,309,519	$4,155,428	$6,464,947
Tar:						
Production—gallons	251,489,525	11,809,945	263,299,470	276,223,878	12,677,861	288,901,739
Sales—						
Quantity—do	188,601,279	11,631,723	200,233,002	205,045,432	12,661,725	217,707,157
Value	$5,917,438	$447,534	$6,364,972	$6,427,207	$491,342	$6,918,549
Average value	$0.031	$0.038	$0.032	$0.031	$0.039	$0.032
Ammonia:						
Production (NH_3 equivalent of all forms)—pounds	166,819,068	7,508,125	174,327,193	178,549,257	8,062,339	186,611,596
Liquor (NH_3 equivalent)—						
Production—pounds	59,009,984	6,220,175	65,230,159	43,943,510	6,592,129	50,535,639
Sales—do	55,239,004	6,203,929	61,442,933	45,107,416	6,539,328	51,646,744
Value	$6,764,477	$616,697	$7,381,174	$5,106,400	$586,550	$5,692,950
Sulphate—						
Production—pounds	431,236,334	5,151,800	436,388,134	538,422,986	5,880,841	544,303,827
Sales—do	418,567,836	4,948,000	423,515,836	550,928,658	6,564,115	557,492,773
Value	$18,855,546	$206,231	$19,061,777	$20,833,785	$224,959	$21,058,744
Crude light oil:						
Production—gallons	84,663,602	2,558,848	87,222,450	89,876,404	2,597,005	92,473,409
Sales—do	3,329,765	434,507	3,764,272	----------	----------	----------
Value	$896,569	$66,473	$963,042	----------	----------	----------
Light-oil derivatives:						
Production—gallons	56,488,204	1,352,513	57,840,717	56,829,943	9,894,069	66,724,012
Sales—do	54,850,028	828,885	55,678,913	66,593,577	1,591,174	68,184,751
Value	$24,188,106	$521,826	$24,709,932	$12,282,453	$288,393	$12,570,846
Naphthalene:						
Crude—						
Production—pounds	10,422,668	192,131	10,614,799	3,391,998	188,000	3,579,998
Sales—do	10,211,627	192,131	10,403,758	3,850,055	188,000	4,038,455
Value	$282,398	$5,183	$287,581	$79,396	$2,848	$82,244
Refined—						
Production—pounds	5,472,699	----------	5,472,699	2,763,271	----------	2,763,271
Sales—do	5,486,689	----------	5,486,689	2,663,585	----------	2,663,585
Value	$362,648	----------	$362,648	$109,120	----------	$109,120
All other products, value	$1,699,347	$56,998	$1,756,345	$645,142	----------	$645,142

[1] Includes all by-product ovens built by city gas companies, some of which are operated in conjunction with coal, oil, and water gas plants. Does not include independent by-product plants which may sell gas to public utility companies for distribution.

[2] No data. Figures presumably included with illuminating gas.

TABLE 88.—*Production of coke, breeze, gas, and by-products at by-product coke plants owned by city gas companies (public utilities) and included by the Bureau of the Census in the manufactured-gas industry, and at all other by-product coke plants, 1918–1925*—Continued

Product	1920			1921		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total
Total value	$384,811,469	$23,159,031	$407,970,500	$165,674,988	$12,296,445	$177,971,433
Number of plants	59	9	68	60	7	67
Coke:						
Production—net tons	29,637,341	1,196,610	30,833,951	19,045,898	703,682	19,749,580
Value	$299,353,966	$13,674,766	$313,028,732	$111,363,502	$6,143,144	$117,506,646
Average value	$10.10	$11.42	$10.15	$5.85	$8.73	$5.95
Screenings and breeze:						
Production—net tons	2,355,745	105,090	2,460,835	1,759,121	71,989	1,831,110
Sales—do	534,402	28,617	563,019	198,641	7,226	205,867
Value	$1,162,016	$86,988	$1,249,004	$459,286	$14,823	$474,109
Average value	$2.17	$3.04	$2.22	$2.31	$2.05	$2.30
By-products:						
Gas—						
Production—M cubic feet	458,795,989	17,689,755	476,485,744	299,094,737	11,093,976	310,188,713
Sales of surplus—						
Used under boilers—						
Quantity—M cubic feet	25,405,435	24,853	25,430,288	12,117,371	5,406	12,122,777
Value	$2,197,506	$18,829	$2,216,335	$1,116,855	$3,232	$1,120,087
Used in steel or affiliated plants—						
Quantity—M cubic feet	151,764,807	----------	151,764,807	98,351,412	637	98,352,049
Value	$14,301,095	----------	$14,301,095	$10,593,140	$64	$10,593,204
Distributed through city mains—						
Quantity—M cubic feet	43,862,255	9,358,569	53,220,824	37,697,305	6,128,867	43,826,172
Value	$8,274,574	$7,442,314	$15,716,888	$9,195,201	$5,054,760	$14,249,961
Tar—						
Production—gallons	348,253,422	12,410,702	360,664,124	245,261,119	7,790,530	253,051,649
Sales—						
Quantity—do	161,705,482	12,658,214	174,363,696	128,436,242	6,856,805	135,293,047
Value	$5,845,820	$532,220	$6,378,040	$5,270,774	$374,535	$5,645,309
Average value	$0.036	$0.042	$0.037	$0.041	$0.055	$0.042
Ammonia—						
Production (NH_3 equivalent of all forms)—pounds	224,930,114	9,801,267	234,731,381	159,160,773	5,089,419	164,250,192
Liquor (NH_3 equivalent)—						
Production—pounds	57,396,265	8,380,994	65,777,259	27,023,829	5,066,731	32,090,560
Sales—do	53,694,013	8,382,759	62,076,772	30,009,918	5,146,636	35,156,554
Value	$7,744,076	$841,097	$8,585,173	$3,052,433	[2] $483,084	$3,525,551
Sulphate—						
Production—pounds	670,135,396	5,681,090	675,816,486	528,547,798	90,730	528,638,528
Sales—do	619,888,706	6,125,269	626,013,975	529,931,877	109,839	530,041,716
Value	$26,888,017	$222,243	$27,110,260	$13,090,737	(2)	$13,100,703
Crude light oil—						
Production—gallons	107,216,564	2,493,351	109,709,915	75,158,488	1,758,781	76,917,269
Sales—do	569,290	497,755	1,067,045	2,261,437	171,641	2,433,078
Value	$59,403	$66,755	$126,158	$213,572	$26,539	$240,111
Light-oil derivatives—						
Production—gallons	89,738,990	2,307,916	92,046,906	58,633,996	1,207,806	59,841,802
Sales—do	79,140,803	1,020,066	80,160,869	59,706,746	1,163,632	60,870,378
Value	$18,466,444	$268,080	$18,734,524	$11,141,203	$193,401	$11,334,604
Naphthalene—						
Crude—						
Production—pounds	11,070,674	176,133	11,246,807	2,603,330	224,426	2,827,756
Sales—do	11,264,903	242,800	11,507,703	1,428,040	224,426	1,652,466
Value	$303,527	$4,472	$307,999	$37,967	$2,692	$40,659
Refined—						
Production—pounds	2,921,282	----------	2,921,282	115,229	----------	115,229
Sales—do	2,941,059	----------	2,941,059	331,057	----------	331,057
Value	$179,975	----------	$179,975	$18,676	----------	$18,676
All other products, value	$35,050	$1,267	$36,317	$121,642	$171	$121,813

[1] Includes all by-product ovens built by city gas companies, some of which are operated in conjunction with coal, oil, and water gas plants. Does not include independent by-product plants which may sell gas to public utility companies for distribution.

[2] Value of sales of sulphate and liquor combined amounted to $483,084, but can not be shown separately.

TABLE 88.—*Production of coke, breeze, gas, and by-products at by-product coke plants owned by city gas companies (public utilities) and included by the Bureau of the Census in the manufactured-gas industry, and at all other by-product coke plants, 1918–1925*—Continued

Product	1922			1923		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total
Total value	$261,581,024	$11,655,669	$273,236,693	$354,038,275	$18,345,833	$372,384,108
Number of plants	57	7	64	58	7	65
Coke:						
Production—net tons	27,889,475	661,070	28,550,545	36,637,455	960,209	37,597,664
Value	$182,288,719	$5,988,048	$188,276,767	$247,806,788	$9,784,530	$257,591,318
Average value	$6.54	$9.06	$6.59	$6.76	$10.19	$6.85
Screenings and breeze:						
Production—net tons	2,339,101	56,185	2,395,286	2,263,275	69,439	2,332,714
Sales—do	520,944	5,193	526,137	689,201	1,137	690,338
Value	$1,569,151	$14,248	$1,583,399	$2,713,707	$3,138	$2,716,845
Average value	$3.01	$2.74	$3.01	$3.94	$2.76	$3.94
By-products:						
Gas—						
Production—M cubic feet	432,250,304	10,420,810	442,671,114	585,941,458	15,213,835	601,155,293
Sales of surplus—						
Used under boilers—						
Quantity—M cubic feet	19,121,177	2,637	19,123,814	33,731,530	9,228	33,740,758
Value	$1,249,061	$2,264	$1,251,325	$1,816,551	$4,257	$1,820,808
Used in steel or affiliated plants—						
Quantity—M cubic feet	144,976,030	----------	144,976,030	200,099,200	----------	200,099,200
Value	$15,942,446	----------	$15,942,446	$22,646,134	----------	$22,646,134
Distributed through city mains—						
Quantity—M cubic feet	51,802,726	5,127,527	56,930,253	58,302,024	6,841,491	65,143,515
Value	$15,847,485	$4,479,163	$20,326,648	$17,115,166	$6,001,412	$23,116,578
Sold for industrial use—						
Quantity—M cubic feet	10,252,518	100,403	10,352,921	18,657,164	801,617	19,458,781
Value	$997,470	$107,431	$1,104,901	$2,950,389	$1,075,311	$4,025,700
Tar—						
Production—gallons	320,012,378	7,767,356	327,779,734	429,929,749	10,977,360	440,907,109
Sales—						
Quantity—do	154,454,665	7,749,752	162,204,417	200,792,985	10,946,484	211,739,469
Value	$6,043,566	$376,177	$6,419,743	$8,675,485	$575,067	$9,250,552
Average value	$0.039	$0.049	$0.040	$0.043	$0.053	$0.044
Ammonia—						
Production (NH_3 equivalent of all forms)—pounds	219,585,704	5,030,561	224,616,265	280,807,080	6,874,513	287,681,593
Liquor (NH_3 equivalent)—						
Production—pounds	45,699,867	5,030,561	50,730,428	51,825,389	6,874,513	58,699,902
Sales—do	43,611,500	4,912,437	48,523,937	50,986,996	6,872,703	57,859,699
Value	$4,170,281	$389,254	$4,559,535	$5,139,706	$614,757	$5,754,463
Sulphate—						
Production—pounds	695,543,349	----------	695,543,349	915,926,762	----------	915,926,762
Sales—do	714,752,882	----------	714,752,882	884,952,912	----------	884,952,912
Value	$17,818,236	----------	$17,818,236	$25,954,413	----------	$25,954,413
Crude light oil—						
Production—gallons	99,882,387	1,555,168	101,437,555	133,976,047	1,671,128	135,647,175
Sales—do	4,860,047	278,048	5,138,095	6,233,952	305,416	6,539,368
Value	$593,981	$36,787	$630,768	$642,438	$41,107	$683,545
Light-oil derivatives—						
Production—gallons	74,678,102	990,472	75,668,574	103,880,182	941,897	104,822,079
Sales—do	71,171,989	998,816	72,170,805	102,467,452	969,841	103,437,293
Value	$14,776,860	$260,306	$15,037,166	$18,127,269	$242,520	$18,369,789
Naphthalene—						
Crude—						
Production—pounds	5,966,240	141,502	6,107,742	11,535,107	336,900	11,872,007
Sales—do	3,157,329	141,502	3,298,831	9,710,527	336,900	10,047,427
Value	$50,112	$1,991	$52,103	$170,482	$3,734	$174,216
Refined—						
Production—pounds	1,810,972	----------	1,810,972	1,139,922	----------	1,139,922
Sales—do	1,589,084	----------	1,589,084	1,198,206	----------	1,198,206
Value	$79,149	----------	$79,149	$65,483	----------	$65,483
All other products, value	$154,507	----------	$154,507	$214,264	----------	$214,264

[1] Includes all by-product ovens built by city gas companies, some of which are operated in conjunction with coal, oil, and water gas plants. Does not include independent by-product plants which may sell gas to public utility companies for distribution.

TABLE 88.—*Production of coke, breeze, gas, and by-products at by-product coke plants owned by city gas companies (public utilities) and included by the Bureau of the Census in the manufactured-gas industry, and at all other by-product coke plants, 1918–1925*—Continued

Product	1924			1925		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)[1]	Total
Total value	$283,950,186	$17,033,235	$300,983,421	$315,031,928	$21,560,885	$336,592,813
Number of plants	60	11	71	61	13	74
Coke:						
Production—net tons	33,072,640	910,928	33,983,568	38,786,990	1,125,169	39,912,159
Value	$188,373,788	$7,316,221	$195,690,009	$201,919,090	$8,908,481	$210,827,571
Average value	$5.69	$8.03	$5.76	$5.21	$7.92	$5.28
Screenings and breeze:						
Production—net tons	2,875,259	75,551	2,950,810	3,434,031	112,068	3,546,099
Sales—do	532,962	3,075	536,037	838,683	10,761	849,444
Value	$1,481,920	$9,555	$1,491,475	$3,011,352	$28,366	$3,039,718
Average value	$2.78	$3.11	$2.78	$3.59	$2.63	$3.58
By-products:						
Gas—						
Production—M cubic feet	526,551,949	14,549,101	541,101,050	621,407,582	18,236,480	639,644,062
Sales of surplus—						
Used under boilers—						
Quantity—M cubic feet	29,781,641	12,405	29,794,046	25,097,467	141,605	25,239,072
Value	$1,723,617	$5,396	$1,729,013	$1,429,399	$21,854	$1,451,253
Used in steel or affiliated plants—						
Quantity—M cubic feet	187,171,883	----------	187,171,883	229,989,920	40,405	230,030,325
Value	$21,007,607	----------	$21,007,607	$26,353,561	$27,096	$26,380,657
Distributed through city mains—						
Quantity—M cubic feet	58,436,071	7,240,796	65,676,867	66,465,103	10,992,159	77,457,262
Value	$16,506,628	$6,979,788	$23,486,416	$18,770,746	$10,548,563	$29,319,309
Sold for industrial use—						
Quantity—M cubic feet	16,979,022	1,582,035	18,561,057	28,625,622	901,991	29,527,613
Value	$2,210,074	$1,351,837	$3,561,911	$3,926,659	$406,341	$4,333,000
Tar—						
Production—gallons	410,189,148	11,885,178	422,074,326	467,344,530	13,504,284	480,848,814
Sales—						
Quantity—do	198,385,772	11,594,227	209,979,999	225,533,874	14,627,112	240,160,986
Value	$9,006,201	$617,319	$9,623,520	$11,107,156	$796,040	$11,903,196
Average value	$0.045	$0.005	$0.046	$0.049	$0.054	$0.049
Ammonia—						
Production (NH$_3$ equivalent of all forms)—pounds	265,016,648	7,294,643	272,311,291	310,744,721	8,764,684	319,509,405
Liquor (NH$_3$ equivalent)—						
Production—pounds	41,862,929	7,166,595	49,029,524	57,425,326	7,830,441	65,255,767
Sales—do	40,556,700	7,109,111	47,665,811	47,128,790	7,680,545	54,809,335
Value	$4,071,249	$585,179	$4,656,428	$4,385,501	$581,384	$4,966,885
Sulphate—						
Production—pounds	892,614,878	512,193	893,127,071	1,013,277,580	3,736,970	1,017,014,550
Sales—do	930,946,913	382,657	931,329,570	986,179,337	3,497,183	989,676,520
Value	$22,511,499	$10,749	$22,522,248	$22,464,765	$82,143	$22,546,908
Crude light oil—						
Production—gallons	127,760,141	1,196,814	128,956,955	145,285,887	1,157,219	146,443,106
Sales—do	7,409,139	431,443	7,840,582	9,719,992	481,908	10,201,900
Value	$611,690	$40,777	$652,467	$1,002,813	$49,772	$1,052,585
Light-oil derivatives—						
Production—gallons	100,316,849	551,156	100,868,005	116,885,817	502,803	116,388,620
Sales—do	98,286,822	568,939	98,855,761	112,552,884	505,818	113,058,702
Value	$16,262,260	$113,968	$16,376,228	$20,431,928	$109,844	$20,541,772
Naphthalene—						
Crude—						
Production—pounds	8,165,586	213,080	8,378,666	9,154,771	84,119	9,238,890
Sales—do	7,678,036	213,080	7,891,116	9,608,066	84,119	9,692,185
Value	$113,859	$2,446	$116,305	$91,368	$1,001	$92,369
Refined—						
Production—pounds	13,302	----------	13,302	1,018	----------	1,018
Sales—do	327,957	----------	327,957	208,332	----------	208,332
Value	$11,903	----------	$11,903	$5,124	----------	$5,124
All other products, value	$57,891	----------	$57,891	$132,466	----------	$132,466

[1] Includes all by-product ovens built by city gas companies, some of which are operated in conjunction with coal, oil, and water gas plants. Does not include independent by-product plants which may sell gas to public utility companies for distribution.

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